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CAPVEST

A Computer Program to Analyze Profitability and Financial Feasibility of Major Capital Investments

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INTRODUCTION

Modern farm businesses frequently require major changes, often involving large capital investments, if they are to be kept competitive. The managers of these businesses must be continually searching out and analyzing alternatives to determine which changes may be profitable and when needed changes should be made. Many of the investments that should be analyzed have characteristics that make appropriate analysis difficult. These include:

1. A multiperiod life with expenses and income unevenly distributed throughout the life.

2. A number of different individual investment items (machines, buildings, land parcels and groups of animals) with different asset lives and tax status.

3. A large enough potential effect on income to move the business owners through several marginal tax rates.

4. Differential susceptibility to the impact of inflation.

5. Complex financing and refinancing requirements resulting in major changes in debt service commitments.

The major capital investment computer program discussed in this publication is designed to assist with the analysis of investments having some or all of these characteristics. The program has three parts:

1. Computation of the net present value of proposed investment or "will the investment be profitable?"

2. Financial feasibility or "will the business generate enough revenue to make the debt payments?"

3. A budget generator for dairy herd expansion proposals.

The Net Present Value Section of the program calculates the annual income and expense flows that could be expected to be generated by an investment, converts these flows to an after-tax basis, and discounts the after-tax flows to determine the expected gain or loss (net present value) that would result if the investment were made. Input for the model includes the characteristics of the individual investment items, the cash flows to be generated by the investment, tax status and the opportunity cost of capital. Output includes the net present value of the investment and a summary of the flows generated by the investment. The Net Present Value Section of the model assumes that the capital to acquire investment items flows out at the time each item is required. Therefore, principal and interest payments are not included in these cash flows.

The Financial Feasibility Section of the program calculates the payments required to service all debt and computes whether the business, including the investment under consideration, generates enough revenue to make the payments on the current debt plus payments on additional debt capital needed to acquire the proposed investment. Alternatively, the program will make the same calculations for only the added investment being evaluated.

The dairy budget generator may be used to generate cash flows for dairy herd expansions in situations for which base year information is available. It cannot be used for nondairy alternatives nor for cases where data for a base year of dairy farm operations are unavailable.

The program is specifically designed to handle the peculiarities of dairy, orchard and vineyard investments. Investments for other types of agriculture are handled by straightforward discounted cash flow techniques.

If the user wishes to include inflation in the analysis, any investment or cash flow item may be inflated by changing the appropriate assumption.

This publication is designed to assist a user of the major capital investment computer program in making appropriate input entries and interpreting the results. The first section of the publication explains input entries, indicates possible error messages and explains the results. Table 1, indicating the values assumed by the model but which can be changed by the user, is placed at the front of the publication for easy access. Use of this table is explained under modification of assumptions. Table 6 indicates the parameters used by the model. These parameters are values that are used by the model but cannot be changed by the user. Table 6 appears at the end of the first section on page 50.

The second section contains two examples of the use of the program: (1) A dairy farm expansion using the budget generator and (2) An investment in orchard development.

INSTRUCTIONS FOR PREPARING DATA FOR INPUT TO THE COMPUTER

To prepare data for input to the computer, the data relevant to the problem being analyzed are entered on an input form. The input form sections are replicas of the sections that appear on the computer screen. The input form contains instructions that are helpful in entering data on the form and into the computer. See page 9 for detailed information about entering data on the input form.

The computer program operates on IBM compatible microcomputers. The program is stored on either a 5 1/4" or on a 3 1/2" diskette. If your computer has a hard disk, the program should be stored in a directory such as CAPVEST. See page 27 for more instructions on computer data entry. Data are entered on screens that are facsimiles of the paper input form. It is recommended that the input data be entered on the input form first rather than trying to make the original entries on the computer screen.

Table 1. VALUES ASSUMED BY THE MODEL

Assumed Value	Assumption Code	Definition
General Model Assumptions:		
12.0	1	Calf price as a % of cull cow price.
40.0	2	Calves sold as % of cow numbers.
0.0	4	Federal investment tax credit rate (percent).
4.0	5	State investment tax credit rate (percent).
40.0	56	Percent that the price of the yearlings purchased is of cow purchase price.
100.00	57	Percent of added yearlings that will be purchased (whenever cows are purchased, sufficient yearlings will be added to provide replacements required in the year after purchase).
90.0	58	Percent that price of raised animals is of the price of purchased animals.
0.	127	Investment tax credit basis reduction option. 0 = Basis is reduced by one-half Federal investment credit taken and rate is indicated by assumption 04. 1 = Basis is not reduced by ITC taken. ITC rate is assumption 04 minus assumption 128.
2.	128	Reduction in ITC rate (percentage points) when basis is not reduced by one-half Federal ITC taken. (ITC rate is reduced instead of reducing basis.)
2.	130	Number by which state personal exemptions are less than federal personal exemptions.
$ 1,000.	131	State personal exemption.
0.	132	Federal capital gains rate (% excluded).
0.	133	State capital gains rate (% excluded).
$13,000.	137	State standard deduction.
10.	139	Recovery class for trees and vines.
0.	140	Capital gains rate (% excluded) for terminal value calculations (only).
1000.	143	Federal itemized deductions other than state tax.

Table 1. VALUES ASSUMED BY THE MODEL (continued)

Assumed Value	Assumption Code	Definition
General Model Assumptions:		
0.0	54	Rate (%) by which investment items, living expense and cash flows are inflated. 0-98 = Purchased buildings, equipment, land, purchased cattle, cull cattle, orchard and vineyard establishment and development costs, living expenses and cash flows, and Federal Adjusted Gross Income without the investment are inflated at rate entered. 99 = These investment items are inflated by the rates indicated in assumptions 6 through 10, 55, 134, 135 and 138.
4.0*	55	Rate of inflation for Federal Adjusted Gross Income without the investment.
4.0*	6	Inflation rate on buildings.
4.0*	7	Inflation rate on equipment.
4.0*	8	Inflation rate on purchased cattle.
4.0*	9	Inflation rate on purchased land.
4.0*	10	Inflation rate on cull cattle.
4.0*	135	Annual rate of inflation in cash flows generated by the investment (Cash Flow Section), by the rest of the business (Financial Feasibility Section, used when budget generator not used), and in nonfarm income.
4.0*	138	Inflation rate on orchard and vineyard establishment and development costs.
Financial Feasibility Assumptions:		
4.0*	134	Annual rate of inflation on living expenses (used with financial feasibility only).

*These values are used only if assumption 54 is set at 99. However, if these assumptions are changed under "modification of assumptions," the rate entered will be used even if assumption 54 is set at zero or 99.

Table 1. VALUES ASSUMED BY THE MODEL (continued)

Assumed Value	Assumption Code	Definition
Financial Feasibility Assumptions:		
0.	126	Number of years for which replacement of existing machines will be avoided because the new investment is made.
85.	129	Percent of livestock sales generated by the investment that qualifies for capital gain treatment. (Currently irrelevant because of TRA86.)
10.0	141	Dividing line between intermediate and long-term loans (years).
Dairy Budget Generator Assumptions:		
0.0	11	If 0.0, labor cost will increase to value entered in the Budget Projection Data section with the annual increase proportional to the increase in herd size. If 1-5, total increase from base year cost to the value entered occurs in year 1, 2, 3, 4 or 5; e.g., 1 indicates increase occurs in year 1.
$250.	12	Cost of feed value provided by an acre of corn (100 bu. at $2.50).
$240.	13	Cost of feed value provided by an acre of hay crop (3.0 tons at $80).
$140.	14	Cost of feed value provide by an acre of other feed crops (80 bu. oats at $1.75).
0.0	15	If value is 0.0, feed-crop sales will be used to offset additional feed purchases required when acres per cow decline. If value is 1.0, feed costs will be increased by the value of the additional feed purchases required and feed-crop sales will not be reduced.
$ 25.	16	Minimum increase in machine repair cost for each cow increase in herd size.
100.	17	Maximum percent increase in auto expense.
25.0	18	Fertilizer and lime costs on hay as a percent of corn.
50.0	19	Fertilizer and lime costs on other feed crops as a percent of corn.

Table 1. VALUES ASSUMED BY THE MODEL (continued)

Assumed Value	Assumption Code	Definition
Dairy Budget Generator Assumptions:		
100.0	20	Fertilizer and lime costs on nonfeed crops as a percent of corn.
50.0	21	Seeds and plants cost on hay as a percent of corn.
100.0	22	Seeds and plants cost on other feed crops as a percent of corn.
100.0	23	Seeds and plants cost on nonfeed crops as a percent of corn.
50.0	24	Spray and other costs on hay as a percent of corn.
25.0	25	Spray and other costs on other feed crops as a percent of corn.
100.0	26	Spray and other costs on nonfeed crops as a percent of corn.
1.0	27	Percent decline in milk production per 10 percent increase in herd size over the percent indicated in assumption 136 (enter negative value if production is to increase).
3.0	28	Years to recover from decline in milk production due to expansion (maximum of five years, enter 9 if recovery not expected to occur).
20.0	136	Minimum percent change in herd size before milk production level changes take effect.
	83-87	Budget assumptions used to calculate taxes, insurance and land, building and fence repair when market value of real estate before investment, entered on the second Budget Projection Data screen, is zero.
$1.25	83	Land, buildings and fence repair expense per $100 real estate investment.
$2.00	84	Real estate taxes per $100 real estate value.
0.5	85	Insurance cost per dollar investment for cattle and machinery as a percent of that for real estate.
$ 1,300.	86	Value per cow of existing herd (total value of the cows and replacements divided by number of cows).
$ 1,075.	87	Machinery investment per cow.

Table 1. VALUES ASSUMED BY THE MODEL (continued)

Assumed Value	Assumption Code	Definition
Dairy Budget Generator Assumptions:		
	30-52	Can be used to specify any particular item in the generated budget. The value entered will be used for all years (will be inflated if inflation is used).

Code	Item	Code	Item	Code	Item
30	Labor	38	Vet and medicine	46	Rent
31	Feed	39	Other dairy expense	47	Telephone & Electric
32	Machine hire	40	Lime & fertilizer	48	Misc. exp.
33	Machinery repair	41	Seeds and plants	49	Milk sales
34	Auto expense	42	Spray and other crop expenses	50	Livestock sales
35	Gas and oil	43	Land, bldg., & fence repair	51	Crop sales
36	Purchased livestock	44	Taxes	52	Misc. receipts
37	Breeding fees	45	Insurance		

$100.	53	Minimum level of purchased feed per cow (crop sales cannot be used to offset this portion of feed bill).
0.0	29	Indicated rate by which dairy budget cash flows are to be inflated. 0-98 = All items listed in assumptions 59-82 will be inflated by the rate entered. 99 = Inflation coefficients indicated in assumption 59-82 will be used.
	59-82	Used to specify the rate of inflation (%) for all items in the cash flow budget. The values listed will be used only if assumption code 29 is set at 99. If assumption code 29 is set at 99, the values listed will be used for all items except those specifically set at other rates by additional entries under input Section 9, "Modification of Assumptions."

Table 1. VALUES ASSUMED BY THE MODEL (continued)

Assumed Value	Assumption Code	Definition
Dairy Budget Generator Assumptions:		
4.0	59	Land rental rate (Budget Projection Data section). See assumption 76.
4.0	60	Labor
4.0	61	Feed
4.0	62	Machine hire
4.0	63	Machinery repair
4.0	64	Auto expense
4.0	65	Gas and oil
4.0	66	Purchased livestock
4.0	67	Breeding fees
4.0	68	Vet and medicine
4.0	69	Other livestock expense
4.0	70	Lime and fertilizer
4.0	71	Seeds and plants
4.0	72	Spray and other crop expense
4.0	73	Land, building and fence repair
4.0	74	Taxes
4.0	75	Insurance
4.0	76	Rent (base year rent only). See assumption 59.
4.0	77	Telephone and electricity
4.0	78	Miscellaneous expenses (year 6 and later)
4.0	79	Milk sales
4.0	80	Livestock sales
4.0	81	Crop sales
4.0	82	Miscellaneous income (year 6 and later)

EXPLANATION OF INPUT DATA

Section 1. Investment Planning Information

Name: Enter the name of the person for whom the problem is being analyzed.

Title: Enter a title to identify the investment proposal being analyzed. In identifying the investment item it is suggested that you be as descriptive as possible about the particular investment being considered and the problem being analyzed.

Planning Period: Enter the number of years to be used in evaluating the investment. The maximum planning period length is 25 years. Fractions of years cannot be entered.

Cost of Capital: Enter the before-tax cost of capital relevant to the owners of the business for which the investment is being made. The cost of capital should reflect the rate of return that could be earned if the money required to make this investment were not used for this investment but were invested in the alternative providing the highest return. For most businesses the cost of capital can be estimated as the weighted average of the rate of interest paid on borrowed capital and the rate of return that could be earned by equity capital in the best alternative investment, where the weights are the amount of debt and equity capital after the investment is made.

Federal Adjusted Gross Income: Enter the Federal adjusted gross income that would be expected in the future if the investment were not made. State adjusted gross income is assumed to be equal to Federal. If the income from the business is divided among more than one family (person), the Federal adjusted gross income entered should be the average for all families (persons).

Federal Standard Deduction: Enter the value of the Federal standard deduction for the year in which the investment will be made. The Federal standard deduction ($5,700 for a joint return in 1991) is indexed to the rate of inflation and therefore changes each year. The value of the standard deduction will be inflated for each year of the planning period by the rate of inflation entered for "Rate of inflation for indexing Federal tax."

Federal Personal Exemption: Enter the amount of the Federal personal exemption for the year in which the investment will be made. The Federal personal exemption ($2,150 in 1991) is indexed to the rate of inflation and therefore changes each year. The value of the exemption will be inflated for each year in the planning period by the rate of inflation entered for "Rate of inflation for indexing Federal tax".

28% Federal Tax Rate Begins at: Enter the level of income ($34,000 on a joint return in 1991) at which the Federal tax rate changes from 15 percent to 28 percent for the year in which the investment will be made. The beginning of the 31 percent bracket is computed by the program from the data entered for the beginning of the 28 percent bracket. The Federal tax brackets are indexed to the rate of inflation and therefore change each year. The value of the tax bracket will be inflated for each year in the planning period by the rate of inflation entered for "Rate of inflation for indexing Federal tax."

Rate of Inflation for Indexing Federal Tax: Enter the projected rate of inflation in the Consumer Price Index, which is used for indexing Federal personal exemptions, standard deductions and the tax brackets. Inflation rates used in your analysis should be consistent with this number. In the late 1980s the actual rate was between four and five percent. Enter zero if you do not plan to inflate income and expenses in your analysis.

Number of Tax Families: Indicate the number of tax families that will divide the net income from the business. The model will assume that all additional income generated by the investment is divided equally among the tax families.

Number of Tax Exemptions: Enter the average number of tax exemptions per tax family operating the business. This must be a whole number.

Modify State Income Tax Rates and Brackets: The state income tax rates and brackets used as defaults are:

Tax Rate	Applies to Income Level Over
5.5	0
7.0	27,000

These rates are for married taxpayers filing jointly in New York beginning in 1994. These rates and brackets may be modified by the user to conform to the state rates and brackets that apply to the user. Up to 12 rates and brackets may be entered. Example:

3.0	0
5.0	10,000
7.0	30,000

Livestock Investment Information: If the user wishes to include purchase of livestock such as dairy or beef cattle as part of the investment proposal, a Y is entered. When Y is entered into the computer, a pop-up window will ask whether the user will enter Cash Flow Projection Data or Budget Projection Data.

Tree/Vine Investment Information: If the user wishes to include establishment and development costs for a new orchard or vineyard, a Y is entered. If an existing orchard or vineyard is to be considered for purchase and no new investment in these assets is being considered, do not enter Y.

Financial Feasibility Information: If the user wishes to use the financial feasibility capability of the program, enter Y. When the Y is entered into the computer program, a pop-up window will ask whether the user wishes to do financial feasibility for the complete farm business or for only the investment being added.

Section 2. Building Investment Information

All information on buildings or other depreciable real estate, such as the part of an investment allocated to trees in an established orchard you are considering for purchase, should be entered in this section. Space is provided for three sets of buildings and/or depreciable real estate. If more than three buildings are included in the investment, they should be reduced to three groups by combining items with similar characteristics, i.e., similar life, salvage value, and cost recovery class. The user is expected to know the recovery classes and depreciation options that are appropriate (legal) to use for each investment item being considered. In the discussion below, and on the input form, the word 'buildings' is used to denote buildings and/or other depreciable real estate.

Total Cost: Enter the total cost of the building or buildings in group A, B or C depending on which column is being used.

Year of Purchase: Enter the year the buildings in the group are to be purchased. If they are purchased at the beginning of the planning period, enter zero; if they are purchased one year from the beginning of the planning period (or at the beginning of the second year), enter 1. In general, enter the number of years from the beginning of the planning period until the building is to be purchased.

Recovery Class: Enter the recovery class for the item. This is the recovery class from the modified accelerated cost recovery system or MACRS. Press ALT-H when the cursor is in this field to see the recovery classes allowed. If the item is not depreciable, enter one of the available recovery classes and enter 9 for recovery option code (which indicates a nondepreciable item).

Recovery Option Code: Enter the code for the MACRS recovery option to be used for this building group. Press Alt-H to see the recovery option codes.

Recovery Option Code on Replacement: Enter the code for the MACRS recovery option on the replacement. Press Alt-H to see the recovery option codes. If item is not to be replaced, enter 9.

Federal Investment Credit: If the investment qualifies for Federal investment tax credit, enter 1; if it does not, enter 0. At the time this publication was written, Federal investment credit was not available.

State Investment Credit: If the investment qualifies for State investment tax credit, enter 1; if it does not, enter 0.

Years to Replacement: If the building is to be replaced, enter the number of years it is to be used before replacement. Buildings with a life shorter than the planning period will be replaced the number of times required to complete the planning period. If a building is not to be replaced, enter "0." If a building is not to be replaced, the model will assume that the item will either physically last for the entire planning period or that the item is no longer required after it wears out. Care should be exercised in coordinating the planning period length selected in Section 1 with the length of life appropriate for the buildings constructed.

Salvage Percent: Enter the salvage percentage to be used. Salvage percent should reflect the estimated market value (in year 0 dollars) of the investment at the end of its period of use. This percentage should be entered even for nondepreciable items since the value used for terminal value of nondepreciable items is the salvage value. The salvage value entered is not used for depreciation purposes (salvage value is disregarded for MACRS purposes) but is used as an estimate of true market value at the end of the investment's life. Enter value in year 0 dollars. If values are being inflated, the inflated value will be calculated by the computer.

Note: If you are considering an investment to develop an orchard or vineyard, use Section 4 B for data on development costs. However, the investment in the trellis should be entered in Section 2 because it can be depreciated immediately rather than waiting until the orchard or vineyard begins producing.

Section 3. Equipment Investment Information

All machinery and equipment investment information should be entered in this section. Space is provided for three sets of equipment. If more than three equipment items are included in the investment, they should be reduced to three groups by combining items with similar characteristics, i.e., similar life, cost recovery class, investment credit status.

Total Cost: Enter the total cost of equipment item or group A, B or C. This should include transportation, installation or other costs where applicable. If items that would otherwise be sold are to be traded in, the fair market value of the trade-in should be added to the boot price to get the actual cost. Include only equipment items which are part of the investment. Do not include items that will be purchased whether the investment is made or not.

Year of Purchase: Enter the year that equipment in the item or group is to be purchased. If it is purchased at the beginning of the planning period, enter zero. If it is purchased in later periods, enter the number of years from the beginning of the planning period until the item is purchased.

Recovery Class: Enter the MACRS recovery class for the item. Press ALT-H when the cursor is in this field to see the recovery classes allowed. If the item is nondepreciable, enter one of the allowed codes and then enter 9 (nondepreciable) for the recovery option code.

Recovery Option Code: Enter the code for the MACRS recovery option to be used for this equipment group. Press ALT-H to see the recovery option codes.

Recovery Option Code on Replacement: Enter the code for the MACRS recovery option on the replacement. If item is not to be replaced, enter 9.

Federal Investment Credit: If the equipment item or group qualifies for Federal investment tax credit, enter 1; if it does not, enter 0.

State Investment Credit: If the equipment item or group qualifies for State investment tax credit, enter 1; if it does not, enter 0.

Years to Replacement: If the equipment item or group is to be replaced, enter the number of years it is to be used before replacement. Equipment with a life shorter than the planning period will be replaced the number of times required to complete the planning period.

If the equipment item is not to be replaced, enter 0. If an equipment item is not replaced, the computer program will assume that the item will either physically last for the entire planning period or that the item is no longer required after it wears out.

Salvage Percent: Enter the salvage percentage to be used. Salvage percent should reflect the estimated market value (in year 0 dollars) of the investment at the end of its period of use. This percentage should be entered even for nondepreciable items since the value used for terminal value of non-depreciable items is the salvage value. The salvage value entered is not used for depreciation purposes (salvage value is disregarded for MACRS purposes) but is used as an estimate of true market value at the end of the investment's life. Enter value in year 0 dollars. If values are being inflated, the inflated value will be calculated by the computer.

Section 4 is used for either Livestock Investment Information (4 A) or Tree and Vine Information (4 B). These two sections are alternatives; therefore, both cannot be used on the same run.

Section 4 A. Livestock Investment Information

The model is designed to handle livestock investments at any time during the first five years of the planning period. It is assumed that all changes in livestock numbers that relate to the investment will be accomplished during the first five years. Only breeding (and/or milking) livestock to increase herd size should be entered in this section. Do not include those animals raised simply as replacements. Purchase and sale of feeder steers or similar livestock should be included in cash flow budgets.

Raised livestock used to increase herd size are included as part of the investment. If the investment were not made, these animals could be sold. Thus, their value is a cost that must be attributed to the investment. The model calculates the number of raised livestock to include in the investment as that part of the year-to-year increase in herd size not provided by purchased animals. For example, if (1) the number of cows before investment is 100, (2) the average number of cows in year 1 is 125, and (3) the number of animals purchased in year 0 (at the time of the investment) is 15, the model will assume that 10 raised animals are part of the investment. The cost of raised cattle is indicated by the price entered for purchased livestock and assumption 58. Do not purchase more cows in one year than the increase in herd size indicated for the following year. If excess animals are purchased in any year, the herd size will not exceed the number entered on the "Number of cows in herd" line, nor will the excess animals be carried over to the next year.

Whenever the herd size is increased, using either purchased or raised animals, the model assumes that sufficient yearlings must also be added to provide the raised replacements required in the following year. It takes at least two years to grow a replacement and only one year will elapse between the time the cows are added to the herd and the time the first of the added cows will be culled. Thus, either (1) the farmer will need to have excess yearlings at the

time the investment is made, (2) additional replacements will need to be purchased the year following the herd size increase or (3) the farmer will have to buy additional yearlings at the time herd size is increased. In any of these cases, the cost of the additional yearlings should be charged as part of the investment. If replacements are raised, the cost of raising the yearlings to freshening age will be included in the cash flow as part of the expenses. Yearlings will not be purchased for that portion of the increase in herd size that is to be replaced with purchased animals.

For example, if the herd size is increased in year 1 by 40 cows and the culling rate is 25 percent, 10 replacements will be required in the first year. If 20 percent of all replacements are purchased, 8 (eight) yearlings will automatically be counted as an investment when the 40 cows are added. The cost of these yearlings is calculated using the cow purchase price per head and assumption 56. If some of the added yearlings are to be raised and assumption 57 is changed, say to 75 percent, then the price used for those that are raised, in this case 6 animals, will be calculated using assumption 58 and assumption 56.

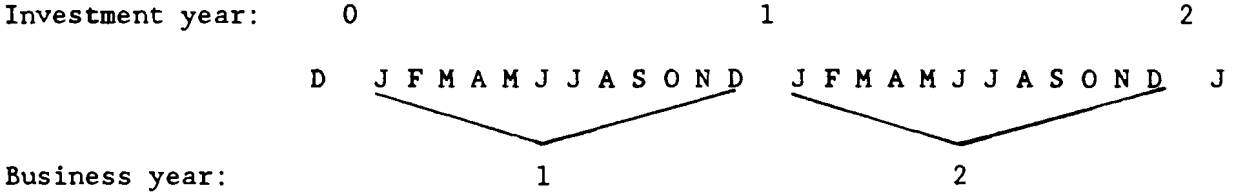
Number of Cows in Herd, Year 0: Enter the number of cows on hand at the time the investment is made. If additional cows have been (will be) kept (instead of sold) in anticipation of making the investment, these animals should be excluded.

Number of Cows in Herd, Year 1: Enter the average number of cows for the first year (first 12 months). This includes animals in the herd before the investment as well as those that are part of the investment. Only those animals that are bought in year zero will contribute to any increase in herd size for year 1.

Years 2 through 5: Enter the average number of cows for the 12-month period implied by the year indicated.

Number of Cows Purchased Year 0: Enter the number of mature animals (cows or bred heifers) to be purchased at the beginning of the planning period. If younger heifers or calves are purchased with the expectation that they will be raised and will enter the herd in one or two years, these animals should either (1) be entered as purchases in the year they enter the herd, or (2) be included as raised animals by allowing the model to impute their investment cost in the year they will enter the herd.

Years 1 through 4: Enter the number of mature animals to be purchased in the year indicated. It is assumed that all investments take place at one-year intervals. Thus, animals purchased in year zero are in the herd during year 1, animals purchased in year 1 are in the herd during year 2, etc. Schematically for an investment made on December 31 (or January 1), this can be shown as:



Cull Value per Head: Enter the net value of an average cull cow. This should reflect the average value received for cows culled from the herd. Selling costs should be subtracted from average gross value per cow. Consideration should be given to the fact that some animals culled are injured or in poor health at the time of sale.

Purchase Price per Head: Enter the price per head that will be paid for animals purchased. If only raised animals are used to increase herd size, enter the value that could be received for raised animals used as part of the new investment and set assumption 58 at 100. If some animals are to be purchased and some raised, enter the average value of all purchased animals to be added to the herd and set assumption 58 at the level required to reflect any difference between the value of purchased and raised animals.

If young animals are purchased to increase the number of raised replacements available in future years, enter their value at the time they enter the milking herd. Always enter a price if herd size is increased by the investment even if no animals are to be purchased. This number is required to calculate the value of raised animals.

Culling Rate (percent): Enter the culling rate expected on animals added to the herd. An entry must be made on this line if herd size is increased. Only whole numbers are allowed.

Percent to be Replaced with Purchased Animals: Enter the percent (whole number) of all animals included as part of the investment that will be replaced by purchased animals. If all replacements are to be raised, enter zero.

Note: When the budget generator is used, the cost generated will be based upon the assumption that the same percentage of replacements is raised after the investment as in the base year. If the number entered here differs significantly from the percentage of replacements purchased in the base year, budget costs will be over or underestimated by the cost of the reduced or increased number of animals raised relative to a proportional change. For example, if replacements equal to 10 percent of the herd are purchased in the base year, the budget generator assumes that replacements equal to 10 percent of the expanded herd will be purchased after the investment is made.

Note: All portions of the next four lines must be completed if purchased animals are part of the investment or if some of the animals that are part of the investment are replaced with purchased animals or if any yearlings are purchased.

Recovery Class: Enter the MACRS recovery class for purchased animals. Press ALT-H when the cursor is in this field to see the recovery classes allowed.

Recovery Option Code, Years 0 through 4: Enter the MACRS recovery option to be used on livestock purchased in each year. Press ALT-H to see the recovery option codes.

Federal ITC: If the investment qualifies for Federal investment tax credit, enter 1; if it does not, enter 0.

State ITC: If the investment qualifies for State investment tax credit, enter 1; if it does not, enter 0.

Cow Value per Head at end of Planning Period: Enter the per cow value of the increase in herd size that is part of the investment. Enter the value in year 0 dollars. If cow values are being inflated, an actual dollar value will be calculated by inflating the value entered.

Average Value per Heifer at the End of Planning Period: Enter the average value of the additional heifers of all ages on hand at the end of the planning period as a result of the increased herd size. Enter the value in year 0 dollars.

Increase in Number of Heifers at End of Planning Period: Enter the increase in number of heifers of all ages on hand at the end of the planning period as a result of the increased herd size. If the policy on purchasing versus raising replacements is not changed as a result of the investment, the number of heifers in the future normally will be the same percent of the number of cows as currently is experienced. For example, if you currently have 100 cows and 60 heifers and herd size is increased to 150, number of heifers will likely increase by 30 head.

Section 4 B. Tree and Vine Information

This section is used to analyze an investment to establish and develop an orchard or vineyard. (If you are considering investment in an existing orchard or vineyard, use Section 2.) Up to two separate varieties or types of plantings may be considered simultaneously. Establishment cannot occur prior to year 2 because year 1 is used for preparation unless the preparation year is to be skipped (see below). Acreage of the same variety or type of planting may be established in any or all of years 2, 3, 4 and 5. Establishment costs must be capitalized but preparation costs and development costs after the initial establishment may be either expensed or capitalized. (The Tax Reform Act of 1986 requires that development costs be capitalized unless the grower elects out of capitalization, in which case straight line alternative MACRS must be used on all newly acquired assets.)

Are Development and Preparation Costs Expensed or Capitalized: Enter 1 to expense or 0 to capitalize development and preparation costs for variety or type of planting A or B. If capitalized, these costs will be recovered as depreciation beginning in the first year that the orchard or vineyard produces income.

Income Tax Recovery Option to be Used: Enter the MACRS recovery option for the variety or planting being considered. State and Federal Investment credit are automatically calculated using assumptions 04 and 05.

Will the Preparation Year be Skipped?: The user may skip the preparation year (or have preparation and establishment costs in the same year) by entering a 1 for Variety A or B.

If the preparation year is skipped the earliest establishment can occur in year 1.

Acres to be Established, Years 2, 3, 4 and 5: Enter acres of each variety or planting to be established in years 2, 3, 4 and 5. (Year 1 to 4 if the preparation year is skipped.)

Land Value Per Acre: If the orchard or vineyard is being established on land that is currently owned (not part of the investment) enter the per acre value of that land in its current condition. The program will treat the land value as an outflow two years before the establishment year to allow for a year of preparation, unless the preparation year is skipped, in which case the land value will be an outflow one year before establishment. This value is used to reflect the fact that use of this land for orchard or vineyard will result in a loss of any net revenue that would have been generated by the land without the investment, i.e., in the production of corn, hay or other crops. The amount of the loss is estimated by treating the value of the land as an input that is returned at the end of the planning period. Effectively the rate of loss is equal to the discount rate.

Do not enter a value on this line if the land on which the orchard or vineyard is to be established is purchased as part of the investment and is entered in Section 5: Land Investment Information.

Preparation Cost Per Acre: Enter preparation costs (such as removing an old orchard or vineyard and other costs in getting the land ready for planting). These costs are assumed to occur in the year before the establishment costs occur. Unless the preparation year is skipped, the earliest that establishment can occur is year 2 of the planning period. If establishment is to occur at year 2, the preparation costs will be at year 1; establishment at year 3 will put the preparation costs at year 2, etc. If development costs are to be capitalized, the preparation costs will be capitalized along with establishment and development costs and depreciation will begin in the first year of production. Otherwise, preparation costs will be expensed.

Establishment Cost Per Acre: Enter initial establishment costs (trees or vines and cost of planting) in dollars per acre. Establishment costs include the costs that the Internal Revenue Service requires to be capitalized rather than expensed.

Note: Unless taxable income is expected to be low in the first few years after establishment, it is suggested that costs of trellises be entered in Section 2 (Building Investment Information) because these costs can be depreciated starting in the year of construction rather than waiting until the orchard or vineyard comes into production.

Development Costs Per Acre, Year 1: Enter development costs per acre that will occur during the year of establishment. Example: Establishment in year 2 will mean that year 1 development costs are an outflow in year two of the planning period. Development costs are costs which occur after initial establishment that may be either capitalized or expensed for income tax purposes.

Years 2 through 5: Enter development costs per acre that will occur during the second, 3rd, 4th and 5th years after establishment.

Terminal Value of Trees and Vines Per Acre: Enter the expected terminal value of the trees or vines at the end of the planning period in year 0 prices. This can be estimated as the value of the land with the trees or vines minus the value of similar land without trees or vines. Do not include the value of the land.

Section 5. Land Investment

All land or other nondepreciable real estate should be entered in this section. Space is provided for three separate land investments. If more than three parcels are purchased they should be grouped by year of purchase for entry.

Year of Purchase: Enter the year that the land in parcel A, B or C will be purchased.

Cost: Enter the total cost of the land in parcel A, B or C. Total cost should include all transfer costs and taxes involved in the purchase.

Terminal Value: Enter the expected terminal value of the land in parcel A, B or C at the end of the planning period excluding any effect of general inflation on land values. This value should include any appreciation in land value due to location relative to population expansion centers or improvement in the quality of the land over the planning period. Any change in value due to general increases in the price level should be excluded. If inflation is included in the analysis, the terminal value will be inflated by the computer.

Section 6. Projected Increase in Cash Flow

For dairy farm business investments, the projected increase in cash flow provided by the investment can be either entered in this section or estimated by the computer program from entries in the Budget Projection Data Section. For all other types of investments, increased cash flows must be entered in this section.

Enter all values in year 0 dollars. If cash flows are being inflated, the program will calculate inflated values.

In calculating cash flows on livestock farms, exclude from income the value of calf and cull cow sales resulting from the investment. Exclude from the expenses the value of purchased replacements resulting from the investment. Each of these items is calculated by the model from data entered in Section 4 A.

Ten different cash flow levels can be entered, with each level occurring in as many consecutive years as desired. Cash flow entries must be made for each year of the planning period. The total number of years for which cash flows are indicated on lines 1 through 10 of this section must equal the planning period in the Planning Information Section. Orchard and vineyard investments with no cash inflows during the development years will have zeros in the Amount column and the number of years of zero cash flows in the Years column.

Line 1: Enter the before-tax net cash inflow level in dollars per year to be received during the year or series of years in the Amount column. Enter the number of years for which the first cash flow level will be received in the Years column.

Line 2: Enter the second level of before-tax cash inflow in dollars to be received per year. Enter the number of years for which the second cash flow level will be received.

Lines 3 through 10: Enter the dollar value of each successive cash flow level and the number of years for which it is to be received.

Section 7. Budget Projection Data

This section is a budget generator for projecting cash income and expenses for dairy farm businesses. It cannot be used to project cash flows for other types of farms. The budget generator operates on the assumption that a farmer's past experience is a reasonable indicator of his expected performance in future years. Thus, the data for a recent year, preferably the year immediately prior to the one in which the investment is made, are used as a basis for estimating the income and expense levels that would occur if the investment is made.

The model assumes that the base year experience is what would occur in future years if the investment were not made. Data for the most recent year may need to be adjusted to develop appropriate base year input. Accrual data from a Cornell Dairy Farm Business Summary is a good starting place. Data should be adjusted for any irregularities that occurred during the year that are not expected to occur in future years.

Examples of such irregularities include:

(a) A feed bill carried over from the previous year that was paid off.

(b) The expense for a fertilizer purchase that is normally made in December but was delayed until the next year.

(c) Above normal corn yields that resulted in a below normal feed bill.

(d) Lime expense for permanent pasture that is made only every four years.

(e) A reduced labor bill because son John was laid off from his job in town and worked for nothing on the farm during May and June.

Use of a list of base year data adjustments and budget assumptions will assist in interpreting results generated.

Budget Projection Data, Page 1

Base Year Expenses: Enter all cash operating expenses for the base year in the appropriate location. It is suggested that these items be added up and the total checked against total expense for the year to be sure that all expenses except interest paid and depreciation are included in one of the categories. Note: If data from a Cornell Dairy Farm Business Summary are being used, most of the categories match. However, all feed categories from DFBS must be summed and entered on the Feed line. Milk marketing expense must be combined with other livestock expense and the total entered on the Other livestock expense line.

Base Year Income: Enter all cash operating income for the base year. It is suggested that these items be added up and checked against total receipts for the year to be sure that all income is included in one of the categories. Note: Receipt data must be combined to fit into the four receipt categories.

Budget Projection Data, Page 2

Hired Labor Cost, Year 5: Enter the amount that is expected to be paid for hired labor in the fifth year (in year 0 dollars). The value of assumption 11

determines whether the increase to this level occurs all in one year or is proportional to the increase in cow numbers.

Acres of Corn, Base Year: Enter the number of acres of corn (silage and grain) grown in the base year.

Years 1 through 5: Enter the number of acres of corn (silage and grain) to be grown in the year indicated.

Acres of Hay Crops, Base Year: Enter the number of acres of hay crops grown in the base year. Hay crops include hay, hay crop silage, annuals (other than corn) that were ensiled or pastured and cropland pasture.

Years 1 through 5: Enter the acres of hay crops to be grown in the year indicated.

Acres of Other Feed Crops, Base Year: Enter the acres of feed crops other than hay crops and corn that were grown in the base year. Other feed crops include such crops as oats, barley, rye and grain sorghum.

Years 1 through 5: Enter the acres of other feed crops to be grown in the year indicated.

Acres of Nonfeed Crops, Base Year: Enter the acres of nonfeed crops grown in the base year. Nonfeed crops include all crops that are not or cannot be fed to livestock. Examples include vegetables, wheat and soybeans. If wheat or soybeans are used for feed, they should be included in other feed crops.

Years 1 through 5: Enter the acres of nonfeed crops to be grown in the year indicated.

Percent of Crop Sales from Nonfeed Crops in Base Year: Enter the percent of total crop sales entered in receipts that resulted from the sale of nonfeed crops grown in the base year on acreage indicated above.

Market Value of Real Estate Before Investment: Enter the market value of land and buildings owned by the business in the base year. This number is used in estimating taxes, insurance, and building and fence repair costs.

Pounds of Milk per Cow in Base Year: Enter the average pounds of milk sold per cow during the base year.

Average Number of Cows in Base Year: Enter the average number of cows on hand during the base year. This number can differ from the number indicated in the first field in Section 4 A, Livestock Investment Information when the base year is not last year or when an unusual number of animals have recently been added to the herd.

Added Crop Acres Rented: Enter the number of acres of additional cropland that will be rented if the investment is made. If no additional cropland is to be rented, enter 0.

Year to Start Rent (1-5): Enter the number of the first year in which the crop land is to be rented. Rental must start in one of the first five years of the planning period.

Rental Rate per Acre: Enter the rental rate (dollars per acre), that is to be paid for the cropland to be rented. Even if rental is not to start in the first year, the value entered should be in year zero dollars. If values are to be inflated, the model will calculate the actual rate for each year.

Section 8. Financial Feasibility

Data required to calculate the financial feasibility of the investment are entered in this section. Financial feasibility can be considered at two levels:

(1) The financial feasibility of the business including the investment can be assessed. In this case the model evaluates the ability of the business, including the new investment, to meet the payments on all debt (old and new) that would be outstanding. To conduct this type of analysis, [C] must be entered in the pop-up window when Financial Feasibility Information, [Y], is entered on the Planning Information screen and information must be provided for all three pages of the Financial Feasibility Section.

(2) The financial feasibility of the investment by itself can be assessed. That is, the model can evaluate whether the investment, by itself, will generate sufficient cash flow to make the debt payments. In this case, [I] is entered on the pop-up screen and the only financial information that is entered in this section is that pertaining to the investment itself (see Section 8: Financial Feasibility - Investment only on page 13 of the input forms). Therefore, all the required input data are entered on one screen.

If financial feasibility of the investment alone is being done as an adjusted analysis, entering [I] on the Planning Information screen will automatically delete any entries not required except that living expenses will remain. This must be changed to zero unless the user wishes to include changes in living expenses (increases or decreases) resulting from the added investment. This can be done by entering the value for changes in living expenses in the next-to-last line of the Financial Feasibility screen.

In either situation, financial feasibility calculations are made for the first five years of an investment proposal.

Financial Feasibility Information, Page 1

A. **Credit Terms Available**

Enter the credit terms that will be obtained for the different sources or types of credit that will be used at the time and after the investment is made. If two different lenders offer the same terms, enter these terms only once.

Years to Repay: Enter the number of years allowed for repayment of the loan under credit terms 1, 2, 3 or 4 depending on which column is being completed.

Interest Rate: Enter the annual interest rate charged with credit terms 1, 2, 3 or 4. Interest rate is entered as a percent. For example, a rate of 11 1/2 percent is entered as 11.50. A decimal must be included in the computer entry. If a variable interest rate is charged, indicate the initial contract rate.

Even Principal and Interest or Even Principal: Indicate the type of repayment plan to be used with credit terms 1, 2, 3 or 4. If the total amount of each payment, including principal and interest, is constant, enter 0. If each payment includes a constant principal payment plus interest on the outstanding balance (principal is constant and interest payments decline as payments are made), enter 1.

Number of Payments per Year: Enter the number of payments to be made each year under credit terms 1, 2, 3 or 4. Enter 12 if payments are monthly.

B. Current Debt Outstanding

All current outstanding debt should be entered here. There is space for five different loans. If more than five loans exist, aggregate loans with similar repayment period and interest rate. To aggregate loans with similar repayment period, add the original amounts and then use the average interest rate, repayment period and original repayment characteristics. If you are considering financial feasibility of the investment alone, i.e., excluding any cash flows from the rest of the business, this section is skipped. Note: [I] must be indicated on the Financial Feasibility pop-up window on the Planning Information screen.

Amount: Enter either (1) the original principal balance of the loan or (2) the amount of each payment for loan A, B, C, D or E. If the amount of each payment is entered, enter the principal plus interest payment for even total payment loans and the amount of principal only for loans where the amount of principal paid on each payment date is constant but the interest payment declines.

Amount is Loan Payment or Original Principal: Enter a zero if the amount entered is the loan payment. Enter 1 if the amount entered on the line above is the original principal.

Number of Payments per Year: Enter the number of payments made per year on loan A, B, C, D or E.

Years Since Loan was Taken: Enter the number of years between the time the loan was taken out and the date the investment is to be made. For example, if the investment is to be made in March of 1991 and loan A was initiated in September of 1988, enter 2.5.

Original Term of Loan (yrs.): Enter the original term of each loan measured in years.

Even Principal and Interest or Even Principal: Indicate the type of repayment plan used with each loan. If the total amount of each payment, including principal and interest, is constant, enter 0. If each payment includes a constant principal payment plus interest on the

outstanding balance (principal is constant and the interest amount declines as payments are made), enter 1.

Interest Rate: Enter the interest rate on each loan. For example, if the interest rate is 12 3/4 percent, enter 12.75. A decimal must be included in the computer input.

Refinance Loan: Refinancing of existing loans is frequently a part of a major capital investment. The year in which refinancing occurs is indicated in this line. If an existing loan will be refinanced, enter 1; otherwise enter zero. The types of loans most likely not to be refinanced are those where the lender places restriction on early repayment and those where credit terms are so favorable that the farmer does not want the loan refinanced.

Credit Terms Used for Refinancing: Indicate the credit terms to be used when each loan is refinanced. One of the sets of credit terms identified at the top of this section must be used. Enter the number of the credit terms to be used. That is, if the set of credit terms described as credit terms 4 are to be used, enter 4 on this line. If you have indicated that the item will not be refinanced, leave this line blank.

Financial Feasibility Information, page 2

In what years will refinancing occur?: Indicate the years in which refinancing will occur. This is accomplished by entering a 1 on the line corresponding to the year of refinancing. If this line is left blank, refinancing will occur only at the time the original investment is made (year 0). Entering a zero in year 0, and any other year will prohibit refinancing in that year. For any loan that is not to be refinanced as indicated in the loan description (on page 1), the existing repayment schedule will be continued. Allowing no refinancing (a 0 under Year 0) will result in continuing all existing loan payments and initiating new loans only for items purchased as part of the investment. For the first analysis of any problem, it is suggested that either no refinancing be allowed or that refinancing be allowed only in year 0.

Year of Refinancing Debt Incurred to Replace Existing Machinery: The existing machinery inventory (excluding the new investment) must be maintained (replaced). The amount spent each year to maintain (replace) that machinery is indicated on the first line of page 3 of Section 8: Financial Feasibility. This replacement machinery is financed at the terms indicated in the last line of this Financial Feasibility page. These debts may be refinanced once to reduce the payment required or may be refinanced each year to slow the rate at which these payments increase. Enter the number of the year in which refinancing is to take place or enter 99 to allow refinancing in each year. It is recommended that this line be set at zero for the first analysis.

Credit Terms Used for New Investment: Indicate the credit terms to be used in financing purchase of investment items identified in the Buildings, Equipment, Livestock, Tree and Vine and Land Sections. Enter the number of the credit terms to be used as described on page 1 of Financial Feasibility. If an item is to be financed from cash on hand, enter 5. Separate credit terms can be indicated for each building and land item. However, all

machinery must be financed with the same credit terms. Similarly, only one set of credit terms can be used for all livestock or all trees and vines. If refinancing is conducted in a year after an investment is made, the same credit terms will be used; the remaining principal balance will be refinanced using the years in the original repayment period with the same payment frequency and interest rate.

Replacement of Existing Equipment: Indicate the credit terms to be used in financing replacement of existing equipment. Do not use credit terms 5, financing from equity.

Financial Feasibility Information, page 3

Average Amount that will be Spent to Replace Existing Machinery in Future Years if the Investment is Not Made: Enter the average amount that will be required to replace the current machinery inventory. It should not include future investments required for expansion or improvement of the quality of machinery used. Do not include replacement of items purchased as part of the investment. The value entered should be in year 0 dollars; do not allow for expected inflation. If inflation is used in the model, this value will be inflated by the value listed in assumption 7.

For a farm where the machinery inventory has been stable for the past few years, the average new machinery purchases for these years is usually a good estimate of future replacement requirements.

This amount can also be estimated by multiplying the appropriate value from Table 2 by the market value of the current machinery inventory. In selecting the appropriate value from Table 2, be sure that the percent market value at time of trade-in represents the value of the item being traded in, <u>at the time it is traded in</u>, as a percent of the price of the replacement item. For example, assume a tractor is purchased in 1985 for $50,000. If that machine is traded for a similar tractor in 1991 that would cost $100,000 when purchased outright and the dealer allows $40,000 trade-in value towards purchase of the new one, the appropriate percent to use in Table 2 is 40 (not 80). Also, the average life used should be the weighted average life with the new value of machinery used as weights. Then, in estimating the average life, give more weight to the life of the items with highest new value. Additional information on estimating machinery replacement can be obtained from Department of Agricultural Economics Research Bulletin 81-29.

Table 2. ANNUAL INVESTMENT REQUIRED TO MAINTAIN MACHINERY INVENTORY

Average Life of Farm Machinery	Market Value at Time of Trade-in as Percent of Replacement Cost			
	10	20	30	40
	----- % of current market value of machinery -----			
5	33	27	22	17
6	27	22	18	14
7	23	19	15	12
8	20	17	13	11
9	18	15	12	10
10	16	13	11	9

Annual Depreciation if the Investment is Not Made: Enter the average amount of machinery, building and livestock depreciation that will be taken each year for tax purposes if the investment is not made. The amount of depreciation taken last year will frequently provide a good estimate of this value, but may need to be adjusted downward if an important item will be completely depreciated within the next year or two. The value entered on this line is used only for calculating income taxes for the financial feasibility portion of the model. Thus, it is most important that this value be correct for the first few years after the investment is made.

Expected Annual Net Cash Flow if the Investment is Not Made: This value is entered only if the budget generator is not used. This is calculated as total cash receipts minus all cash expenses except interest. This can be estimated from last year's records adjusted for any production or price peculiarities that occurred last year. This item is used only for estimating cash flow in the Financial Feasibility Section of the model.

Annual Amount of Income that Qualifies for Capital Gain Treatment if Investment is not Made: This value is entered only if the budget generator is not used. This is the amount of income used in calculating net cash flow for the line above that qualifies for capital gain treatment. Because of TRA86, this line will be zero unless tax laws are changed.

Investment Credit Carryover:

Federal: Enter the amount of federal investment tax credit that has been earned but not used and, thus, can be carried forward for future use. The model assumes that the investment credit has been earned uniformly over theB last 7 years. It is used before any new investment credit is used but will be lost if not used within 15 years of the date earned.

State: Enter the amount of state investment tax credit (thousands of dollars) that has been earned but not used. State Investment Tax Credit will be carried forward until used to offset state taxes.

Expected Annual Investment Credit Without Expansion:

Federal: Federal investment credit has not been available since 1986. No entry should be made here unless the law is changed to allow investment credit. If Federal Investment credit returns, enter the annual average net amount of Federal Investment Tax Credit that will be earned if the investment is not made without consideration for whether or when it will be used. Any expected recapture should be subtracted. This can be estimated as the average machinery investment times the ITC rate, plus the appropriate investment credit for purchased replacement cattle. The value should be entered in year zero dollars. If the inflation capability of the model is used, ITC will be inflated using assumption 7.

State: Enter the annual average amount of State Investment Tax Credit that will be earned by the business if the investment is not made. Enter the amount that will be earned without consideration for when or whether it will be used. Estimating procedures similar to those used for estimating Federal Investment Tax Credit can be used by substituting the state ITC rate for the

federal rate. Enter the value in year 0 dollars. If items are being inflated by the model, this value will be inflated using assumption 7.

Estimated Annual Cash Living Expenses Including Social Security Taxes but not Income Taxes: Enter the amount of cash required for all living expenses except income taxes but including Social Security taxes. This should reflect the amount of cash required by the family or families operating the business. Living expenses should be excluded for anyone who receives a salary that is included in labor expenses in the budget generator or in the cash flows entered in the Cash Flow Section. The value entered must be in year zero dollars. These costs will be inflated using assumption 134. If financial feasibility of the investment by itself is being considered, this field normally will be blank because the added investment will not affect living expenses. If living expenses will increase <u>because of the investment</u>, the amount of the increase is entered in this line.

Expected Annual Nonfarm Income: Enter the amount of nonfarm income that is available to help make debt payments and pay living expenses. Enter the value in year zero dollars. The value entered will be inflated using assumption 135.

Section 9. Modification of Assumptions

A number of coefficients are used by the model in making its calculations. Those coefficients that are likely to be similar for a number of different farm situations are stored in the computer and called assumptions. A list indicating the value assumed for each of the assumptions used in this program is presented in Table 1. Table 1 is presented on pages 3 thru 8 to make it easy to find. If any of the values assumed by the model are inappropriate for the situation being considered, these values can be replaced with more appropriate values.

Replacement of values assumed by the model is accomplished by making entries in lines 1 through 15 of this section. In the first column, enter the new value that is to replace the assumed value. In the second column, enter the assumption code which identifies that assumption.

For example, if the price of calves is expected to be 20 percent of the cull cow price (assumption 1) instead of the 12 percent assumed by the model, the 12 percent can be replaced by 20 percent by making the following entry on line 1.

A decimal point <u>must</u> be included in the Assumption Value. Do not use a decimal in the Assumption Code.

	New Assumption Value	Assumption Code
1.	[20.0]	[1]

Any line in the Modification of Assumptions Section can be used to change any of the assumptions as long as all previous lines are used.

COMPUTER DATA ENTRY

Data are entered into computer screens corresponding to the Sections described in this manual.

When CAPVEST is activated by typing CAP, you will see the screen below. If you are creating a new analysis, enter 1 in the [ ]. This will put you in the CREATE mode. If you want to modify a set of input data that has already been entered, use option 2. This will put you in the MODIFY mode. To perform investment calculations, enter 3. You should use ALT-H and read the help screen before proceeding.

```
                C A P V E S T      v1.0

        Profitability and Financial Feasibility
                        of
                Major Capital Investments

                     Developed by

          Eddy L. LaDue and George L. Casler
          Department of Agricultural Economics
                   Cornell University

              1  -  Create New Analysis
              2  -  Modify Existing Analysis
              3  -  Perform Investment Calculation

              Enter Option No. [ ]

        (** Press ALT-H to see a Help Window; ESC to quit)
```

If you wish to create a new analysis you will be asked for a file name in which to store the data. This name should include the directory (if you are saving on a directory other than the current default directory), an eight (or fewer) letter file name and an extension (usually .dat).

```
            C R E A T E   D A T A   F I L E

        Specify a name for the data file being created:

            [                                        ]

        (include a complete pathname, i.e., a:\subdir\fname.ext
        to write the file to a subdirectory other than the
        default subdirectory

           ***** Pres ALT-H for further instructions *****

        Press F1 or F10 to continue; ESC to return to previous menu
```

While in the CREATE mode (entering a new set of data), the F1 key allows the user to progress from one screen to the next to enter data and F10 allows the user to "back up" to the previous screen.

The data to be entered in each screen is described in EXPLANATION OF INPUT DATA beginning on page 10. On some of the screens, you will see asterisks (*) at the left side of the screen before some of the line descriptions. When the cursor is on a field associated with the description, pressing ALT-H will produce a "help" screen. To get out of help, press ESC or F1.

Data entry in the input data "Sections" or "Screens"

(1) Data is entered in "fields" on each screen. In general, the fields are designed to have one space more than the largest number that should be entered. In other words, there should be at least one blank space left at the right of the entry in each field. Therefore, the Enter or Return key needs to be pressed on completion of each entry to move to the next field.

(2) When the data for a field is complete, press Enter or Return to move the cursor to the next field.

(3) The up arrow (↑) is used to move to a previous field.

(4) The down arrow (↓) may be used to move to a succeeding field.

(5) While in a field the left arrow (←) may be used to back up and the right arrow (→) to go forward in the field.

(6) To correct an entry while still in the data field, use the back space to remove incorrect data and then enter the correct data.

(7) To correct an entry in a field after leaving a field, return to the field using the Return or arrow keys and enter the correct data. Note: If you overwrite <u>part</u> of a field and press Return or Enter, <u>only</u> the part overwritten remains; therefore you need to overwrite the <u>entire</u> field. Thus, if you want to replace a complete entry or replace a number with a shorter number, you must use the Return or Enter key. Changing part of an entry (changing 800500 to 800000 by changing only the 5) can be accomplished using the ↑ or ↓ arrow key to get to and leave the location and the → or ← arrow to get to the digit to be changed.

When the user enters the MODIFY mode, a "Data Modification Selection Menu" appears (see next page). Except for Planning Information, Buildings, Equipment and Land which always appear, the options on the menu conform to the sections in which data were entered when the problem was created. If the user wishes to enter data in sections that do not appear on the menu, he/she must select [1] for Planning Information and then select from Livestock, Trees and Vines and Financial Feasibility. The user enters the appropriate number to indicate the Section to be modified and the screen selected appears. When the desired modifications are made, pressing F10 returns the user to the "Modification" menu. (F1 can be used to go to the next screen without returning to the "Modification" menu if that is desired.) If additional modifications are desired, the number for the appropriate

Section is entered. When modifications are completed and you are on the "Modifications" menu, press ESC. The user is asked whether to overwrite the existing file. If the answer is N (for no) the user is instructed to enter a new file name (on the Create Data File screen).

```
Modify
                    Data Modification Selection Menu

                       Section          Title
                    ______________________________
                          1  -  Planning
                          2  -  Building
                          3  -  Equipment
                          4  -  Livestock
                          5  -  Land
                          6  -  Cash Flow
                          7  -  Budget
                          8  -  Financial Feasibility
                          9  -  Assumptions

                          Enter Section Number:  [ ]
              ***** Pres ALT-H for further instructions *****
                   (Press ESC to return to previous menu)
```

Whether in CREATE or MODIFY mode, once the user has completed the desired data entry the initial menu will appear (after pressing ESC) and the net present value and financial feasibility calculations are made by entering 3. After entering 3, the following screen appears (without the pop-up window in the smaller box):

```
   The calculated results may be written to the screen, printer, or a disk
   file by choosing one of the options listed below.

       To select an output device option
       enter the option number in the space below:
                                  Do you want to include the input
          1 - Screen              data with the calculated results
          2 - Printer             being written to the selected
          3 - Disk file           output device (Y/N)?  [ ]

       Enter option: [1]



     (ESC to return to previous menu)
```

The user has the choice of having the results shown on the screen [1], printed [2] or saved in a file [3]. When a selection is made, a pop-up window asks whether the user wants to have the input data included with the output. If [1] is selected here and the user subsequently asks to have the data printed or

saved in a file (on a later screen), the input data will be included at that time even if N is selected on the pop-up window.

It is recommended that the user first have the output displayed on the screen. This will allow the user to quickly ascertain whether a major error has been made in the input data, thereby producing an obviously incorrect answer. If the answer seems reasonable, it can then be printed or saved to a file. If the answer seems incorrect, the user can return to MODIFY and check the input data before printing.

The output data appear on the Screen in segments limited by the vertical size of the screen. To see subsequent segments, press Enter or PgDn (page down). If you would like to review a previous segment, press PgUp (page up).

When the output on the screen has been reviewed, press ESC. This will produce the following screen on which you can ask to have the output printed, saved to file or neither. Entering [3] will return you to the main CAPVEST menu.

```
Do you want to save the results?
        1 - Yes, to a disk file
        2 - Yes, write results to printer
        3 - No
             Enter option [ ]
```

ERROR MESSAGES ON DATA INPUT SCREENS

If a questionable input entry is made or an inconsistency is found in the data input, an error message is given. There are two types of error messages. The first type of message is activated as soon as incorrect data are entered and the second type of message is activated when the F1 or F10 key is pressed.

For the first type of message, if an inappropriate number is entered in a field, when return is pressed the following message appears at the bottom of the screen:

Not an acceptable answer.

This message is soon replaced by the following:

Select [↑, ↓, <CR>, <ESC>] answer: "X"

The user now has four options which may be used to enter the appropriate data.

CR (or Enter) will insert the value "X" that follows answer: in the field. Therefore, CR should be pressed only if the value "X" is correct. If "X" is not correct, pressing the ↑ or ↓ will place allowable values of "X" after answer: When the correct one appears, press CR and the value "X" will be placed in the field.

ESC will allow the user to clear out the field with the backspace key and enter correct data.

For the second type of error, that is, those that appear when the F1 or F10 key is pressed, the errors and an explanation of their causes are listed below. These errors must be corrected before the user can proceed to another screen. The error message at the bottom of the screen does not disappear until the error is corrected and the F1 or F10 key is pressed.

Section 1: Planning Information

1. Incorrect COST of CAPITAL; return to field, press ALT-H. The decimal must be correctly entered in the cost of capital.

2. Incorrect RATE of INFLATION; return to field, press ALT-H. The decimal must be correctly entered in the rate of inflation.

Section 2: Building Investment

1. Year of purchase for Item "X" not in planning period. A year which is in the planning period must be entered.

2. Years to replacement for Item "X" not in planning period. A year which is in the planning period must be entered.

Section 3: Equipment Investment

1. Year of purchase for Item "X" not in planning period. A year which is in the planning period must be entered.

2. Years to be replacement for Item "X" not in planning period. A year which is in the planning period must be entered.

Section 4: Livestock Investment

1. Cull cow value exceeds the purchase price. Cull cow price must be less than or equal to the purchase price per head.

Section 5: Land Investment

1. Year of purchase for Item "X" not in planning period. A year which is in the planning period must be entered.

Section 6: Projected Increase in Cash Flow

1. Sum of Cash Flow Years not equal to Planning Period. The number of years for which cash flows are entered on lines 1 through 10 on this screen must equal the planning period. If there are years of zero cash flows, these must be included.

Section 7: Budget Projection Data

1. Average number of cows in base year cannot = 0. The budget generator cannot be used unless the number of cows in the base year is greater than zero.

Section 8: Financial Feasibility

1. Incorrect INTEREST RATE, Credit term "X," return to field, press ALT-H. This message is the result of not correctly entering the decimal in the interest rate. The "X" refers to the credit term number.

2. Incorrect YEARS SINCE term, Loan "X," return to field, press ALT-H. A decimal must be entered. For example, 3 years must be entered as 3. or 3.0.

3. Current Debt Outstanding Loan "X": Years Since Loan Taken Out Exceeds Original Term of Loan. The data entered imply that the loan has been outstanding longer than its original period. This could occur only if payments had not been made as scheduled. The model cannot handle such loans. If this is actually the case, re-enter that loan as if it were taken out at the time the investment is made (year since taken out = 0) with the payment entered as it exists. Under "years to repay" enter the number of years that it will take to pay off the loan at that rate of payment.

4. Incorrect INTEREST RATE, Loan "Y," return to field, press ALT-H. The decimal point has not been correctly entered in the interest rate. The "Y" refers to the letter (A, B, C, D, or E) of the loan on Current Debt Outstanding. ALT-H will produce a message and examples on correct entry format.

5. The message below will be presented if the credit terms number entered was not completely identified by specifying the year, interest rate, type and number of payments per year on page 1 of Financial Feasibility.

   Invalid Credit Terms for Financing Building, Item "X"
   Invalid Credit Terms for Equipment
   Invalid Credit Terms for Livestock
   Invalid Credit Terms for Trees and Vines
   Invalid Credit Terms for Replacement of Existing Equipment
   Invalid Credit Terms for Land, Item "X"

6. If the Financial Feasibility Section is used, credit terms must be entered for all new investment items. The error message indicates the investment item for which credit terms have not been entered.

   Credit Terms Not Entered for Buildings, Item "X"
   Credit Terms Not Entered for Equipment
   Credit Terms Not Entered for Livestock
   Credit Terms Not Entered for Trees and Vines
   Credit Terms Not Entered for Land, Item "X"

7. Federal Taxes last 3 years and ITC carryover inconsistent. Since Federal Investment tax credit can be carried forward or back it is impossible to have federal investment tax credit carryover and have paid taxes during the last three years that have not been offset by investment tax credit. Either one or the other of these values must be zero (or blank).

MODIFICATIONS OR ADJUSTED ANALYSES

Most investment decisions will require one or more adjusted (modified) analyses. For example, if an analysis had been made using a 10 percent cost of capital and there was some uncertainty about whether the true rate might be 12 percent, a modification should be run using 12 percent in the Planning Information screen.

After the original problem is solved, you are returned to the initial screen where you may begin a modification by entering [2]. Several successive modifications may be performed. Each one "builds on" the previous one, so it is important to keep track of what you are doing. For example, in the second modification if you want to change some or all of the input for the first modification back to what it was in the original problem, you must specifically make such changes (in addition to changes in other lines that you wish to make for Modification 2).

Thus, if the farmer in the above example also wanted to know the effect of a reduction in his cash flow estimates from $12,000 per year to $11,000 per year, he could do this by entering the new value in the Cash Flow Section for the third modification. However, if he did this, the second modification would use the 12 percent cost of capital used in the first modification. If it is desired that the 10 percent rate be used in modification 2, the original values for cost of capital must be entered in the Planning Information screen.

There are at least two important cases where modifications should be used. The first is where the true value of a coefficient used as input to the analysis is in doubt. The appropriate procedure in this instance is to use the best estimate of the correct value in the first analysis and then run a modification with the coefficient set at the other value or values it may take. This procedure is illustrated in the above paragraph.

A second case is where a different combination of investment items is to be considered. For example, a farmer might consider increasing his herd size by only 50 cows instead of 75, or using a smaller combine and accepting higher losses and labor costs.

In analyzing any problem it is important that significant effort be made to anticipate all alternatives that should be considered. Only if this is done will a satisfactory answer to a real problem be possible with one set of analyses by the computer.

EXPLANATION OF OUTPUT

(See examples on pages 51 and 75.)

Investment analysis results

1. NET PRESENT VALUE OF THE INVESTMENT is the economic return in discounted dollars, over the planning period, if the investment is made. This is the number of dollars that, if received today, would be equivalent to the net income above all costs generated by the investment over the entire planning period. This is calculated as the sum of (1) total of the present value of after-tax net cash flows, (2) present value of after-tax terminal value of all investments, and (3) present value of investment tax credit, less present value of investment tax credit recapture, minus (4) the total of the present

value of all investment outlays. If this value is positive, the investment is expected to be a profitable one and it should be given serious consideration.[1]/ However, it should be stressed that the answers are dependent upon the input values entered and, therefore, the quality of any answer is only as good as the data entered (garbage in - garbage out).

2. PERCENT AFTER-TAX COST OF CAPITAL is the discount rate used in calculating the net present value of after-tax cash flows. An after-tax cost of capital is used to reflect the fact that any return on invested capital will be taxed, and thus the return given up by investing the money in this investment rather than another is less than the before-tax return by the amount of that return that would be paid in taxes.

   The after-tax cost of capital is calculated as the before-tax cost of capital multiplied by one minus the tax rate expressed in decimal form. That is, if the tax rate is 30 percent and the before-tax cost of capital is 10 percent, the after-tax cost of capital is 7 percent or 10 multiplied by (1-.3). The tax rate used in this case is the average tax rate paid on the additional income generated by the investment.

3.1. BEFORE-TAX CASH FLOW is the total net cash inflow to the business resulting from the investment being considered. When the projected cash flows are entered in the Cash Flow Section (the budget generator is not used), the before-tax cash flow for each year is calculated as the value entered in this section plus livestock sales (cull cow and calf sales) generated by the investment. If the budget generator is used, before-tax cash flow is the estimated net income with the investment minus the net income from the business if the investment were not made (base year income, adjusted for inflation when applicable).

3.2. DEPRECIATION is the total depreciation (cost recovery) to be taken for all items included in the investment. To calculate cost recovery, the computer develops a schedule for each investment and then sums the cost recovery for all items for each year.

3.3. TAXABLE INCOME is the increase in taxable income resulting from the investment. It is calculated as the before-tax cash flow minus depreciation with five adjustments. The first adjustment reduces taxable income to reflect capital gain treatment of some livestock sales. This is accomplished by subtracting from before-tax cash flow the federal capital gain deduction (assumption 132) on income from the sale of raised livestock counted as part of the investment and raised replacements resulting from the investment. Animals purchased as yearlings are not considered to be raised animals. Due to the Tax Reform Act of 1986, the capital gain deduction (assumption 132) is set at zero, so this adjustment is not made. If the tax law changes so that there is a capital gain deduction, the user may set assumption 132 at the appropriate value.

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[1]/For a detailed explanation of the net present value method see Casler, G.L., B.L. Anderson and R.D. Aplin, *Capital Investment Analysis: Using Discounted Cash Flows*, Fourth Edition, Department of Agricultural Economics, Cornell University, 1988.

For the second adjustment the undepreciated balance on purchased cows that are sold is subtracted from taxable income. This accounts for (1) tax loss sustained as a result of the sale and (2) the return of investment capital, which is not taxable. Tax losses result when an animal is sold for less than the undepreciated balance on the animal. In example B (Table 3) a tax loss of $350 is incurred. The amount of the sale price of an animal that represents depreciation which has not been taken is return of capital and is nontaxable. Thus, it must be subtracted from before-tax cash income calculated above, which includes the total value of animals sold. The return of capital is $200 in example A and $250 in example B (Table 3). Since the sum of the tax loss and the invested capital returned always equals the undepreciated balance, both of these factors are allowed for by subtracting the undepreciated balance from taxable income.

Table 3: EXAMPLE SITUATIONS WITH SALE OF PURCHASED ANIMALS

Value	Example A	Example B	Example C
Purchase price	1,000	1,000	1,000
Sale (cull) price	500	250	1,500
Depreciation taken	800	400	800
Undepreciated balance	200	600	200

The third adjustment reduces taxable income by the amount of the sales value of each cow purchased as part of the investment that is excluded from taxation because it qualifies for capital gain treatment. That portion of the sales price of an animal that exceeds the original purchase price ($500 in example C) is capital gain income. The amount of the capital gain income to be subtracted from taxable income is determined using assumption 132 which is set at zero because of TRA 86.

For the fourth adjustment, taxable income is reduced to reflect appropriate tax treatment of income from the sale of animals that were originally purchased as yearlings. This is accomplished by applying the same adjustment to these animal sales as is indicated in adjustments 2 and 3 for purchased cows.

The fifth adjustment modifies taxable income to reflect appropriate tax treatment of income from the sale of purchased replacements required as part of the investment (to replace cows and yearlings purchased as part of the investment). This is accomplished by applying the same adjustment for these animal sales as is indicated in adjustments 2 and 3 for purchased cows.

3.4. TAX is the amount of federal and state tax to be paid on the increased taxable income resulting from the investment. To calculate personal income taxes, the federal adjusted gross income entered on the Planning Information screen is used to indicate the level of income if the investment is not made. Federal adjusted gross income is total income from all sources (such as wages, Schedule F, Form 4797) less adjustments (such as IRA's and Keogh's). It is income before itemized or standard deductions and exemptions are subtracted. State adjusted gross income is assumed to be equal to Federal adjusted gross income. State taxable income for the base year is calculated by using the state standard deduction (Assumption 137), the state personal

exemption value (Assumption 131), number by which state personal exemptions are less than Federal personal exemptions (Assumption 130), the number of tax families and average number of tax exemptions per tax family from Section 1: Investment Planning Information. State tax is calculated for the base year using the tax rates in Table 1. State tax is recalculated for each year in the planning period based on the projected income for that year. The state tax on the increased income for each year is the difference between the base year tax and the total tax calculated for each year. Federal taxable income for the base year is calculated by using the rates from Table 6 and the data entered in Section 1 on federal standard deduction, federal personal exemption, beginning of 28 percent bracket, number of tax families and average number of exemptions per tax family. State taxes are deducted from taxable income for calculation of Federal taxes to the extent that they plus other itemized deductions (Assumption 143, default value of $1,000) exceed the Federal standard deduction. Federal tax is recalculated for each year using the projected income for that year and the inflated standard deduction, exemptions and tax brackets based on the rate of inflation entered in Section 1. The Federal tax for each year is the difference between the base year tax and the total tax calculated for each year. If more than one operator is involved in the business, the taxable income for each year in the planning period is divided by the number of tax families before state and federal income taxes are calculated. After state and federal income taxes are calculated they are multiplied by the number of tax families. Total tax printed out as part of the results of each analysis is the sum of state and federal income taxes.

3.5. AFTER-TAX CASH FLOW is the Before-Tax Cash Flow explained in section 3.1 minus the increased taxes that would be paid.

3.6. PRESENT VALUE is the present value of the after-tax cash flows. It is the value in today's dollars of the cash flows generated during each year of the planning period, after adjusting for the taxes that would be paid on that increased income. The "present value" for each year is calculated by discounting the after-tax cash flow received in that year with the after-tax cost of capital.

3.7. TOTAL PRESENT VALUE is the arithmetic sum of the present value of after-tax cash flows for all the years of the planning period.

4.0. INVESTMENTS (OUTLAYS) are printed only for years in which there are one or more investments. Purchases that are required to replace part of the investment are included.

4.1. BUILDING, EQUIPMENT and LAND outlays indicate the amount of investment made each year to purchase and/or replace investment items indicated in the input.

4.2. CATTLE outlays are divided into two parts, (1) investment in purchased cattle, including the initial investment and replacements for the increased herd size, and (2) the value of raised animals that are part of the investment. The value of purchased cattle in any year is the number of animals purchased that year multiplied by the purchase price per head.

The model assumes that for every cow increase in herd size one additional animal must be purchased or an extra raised animal added to the herd. Thus, the number of raised animals that must be included as part of the investment is calculated for each year as the increase in herd size minus the number of

purchased animals. The value of these raised animals is calculated as the number of animals multiplied by the purchase price per head for purchased animals times the percent that the price of raised animals is of purchased animals (assumption 58).

Cattle outlays also include investment required for yearlings added at the time herd size is increased. The value of yearlings is calculated as the number of yearlings purchased or raised multiplied by the respective price for each (see assumptions 56 and 58).

The number of replacements required to replace the increase in herd size is calculated from the total increase in herd size (up to the year for which calculations are being made) and the culling rate, and rounded to the nearest whole animal. This does not include any replacements that have been or may have to be purchased for the existing herd. The number of replacements to be purchased is then determined using "percent to be replaced with purchased animals" from the Livestock screen. The value of purchased replacements is the same as the cost of animals added as part of the investment.

The value of all replacements purchased over the life of the investment are included. The value of raised replacements are included through the various operating cost items (feed, vet, livestock expense, etc.) included in the cash flows entered or calculated by the budget generator.

The number of yearlings required is equal to the number of raised replacements that will be required in the year after herd size is increased (total replacements required minus the number to be purchased as calculated above). The proportion of the yearlings that will be purchased is indicated by assumption 57.

4.3. ORCHARD-VINEYARD outlays are divided into two parts (1) TREES-VINES and (2) LAND. The outlay for trees or vines is the establishment cost per acre times the acres established in that year plus development costs per acre that are capitalized times the acres for which development costs are capitalized.

The outlays for land are the land values per acre from the Tree and Vine screen times acres established each year. This land investment actually represents a land "commitment" rather than investment since it is not a new investment.

4.4. TOTAL investment or outlay for each year is the sum of all buildings, equipment, purchased cattle, raised cattle, orchard-vineyard and land investments made in that year.

4.5. The PRESENT VALUE column indicates the present value of total investments or outlays for each year. This is the economic cost in year 0 dollars of the investment made in each year of the planning period. These values are calculated by discounting the total investment for each year by the after-tax cost of capital.

4.6. TOTAL present value is the sum of the present value of the total investment for all of the years of the planning period.

4.7. TERMINAL VALUE BEFORE-TAX indicates the remaining value of all the items in each of the investment categories (buildings, equipment, cattle, orchard-vineyards and land) at the end of the planning period. For buildings and equipment this is the total of the remaining value that each item would have at the end of the planning period if it had been depreciated using the straight-line method, the years of life implied by the "years to replacement" and the salvage percent indicated in the input for that item. The before-tax terminal value of cattle is the increase in herd size multiplied by the value per cow at the end of the planning period, plus the increase in heifer numbers multiplied by the average value per heifer at the end of the planning period (each of these values were entered on the Livestock Investment screen). The terminal value of land is the sum of the terminal values for each of the land purchases indicated on the Land Information screen.

4.8. TERMINAL VALUE AFTER-TAX is the value of the investment at the end of the planning period minus taxes that would be paid if those items were sold at the end of the planning period.

Taxable gain on buildings and equipment is the difference between the terminal value before tax and the unrecovered cost computed with the cost recovery option requested by the user. The gain is taxed as ordinary income. The amount by which the terminal value of land exceeds its cost is taxable. Since the income is taxable as capital gains, (1 - assumption 132) percent of the increase in value is multiplied by the tax rate. Assumption 130 is currently set at zero because of TRA 86. The tax thus calculated is then subtracted from the before-tax terminal value of land to get the after-tax terminal value.

The taxable income generated by the sale of cattle is calculated as (1 - assumption 132) percent of the value of raised animals plus the taxable income from the sale of animals that were purchased. The value of raised animals is the total increase in the value of the herd minus the value of animals purchased in the last "X" years where "X" is the average number of years to replacement for purchased cows. This is calculated as one divided by the culling rate. Taxable income from the sale of purchased animals is the difference between the undepreciated balance for those animals purchased in the last "X" years and their terminal value, divided between capital gain and ordinary income as appropriate. The taxable income is multiplied by the tax rate and the resulting tax subtracted from the before-tax terminal value to get the after-tax terminal value of cattle.

4.9. PRESENT VALUE of the after-tax terminal value of investments indicates the value in year zero dollars of the money that would be received if the items purchased as part of the investment were sold and the required taxes paid on the gain from the sale. While these items may or may not be sold at the end of the planning period, the increased value represents gain on which taxes will have to be paid sometime. The present value of the after-tax sale value of these items is likely a good approximation of the remaining value of investment items regardless of when they are sold.

5.1. INVESTMENT TAX CREDIT is the amount of investment tax credit that would be earned if the investment were made. This includes both federal (zero at the time this publication was written) and state investment credit. Information is printed out for years in which investment credit is earned. Recapture of investment credit is subtracted to obtain net investment credit.

5.2. PRESENT VALUE OF INVESTMENT TAX CREDIT is the value of the net investment tax credit earned by the investment in terms of year zero dollars. This is the value of the investment tax credit after discounting at the after-tax cost of capital. In calculating this value it is assumed that the tax credit is used in the year it is earned.

6.0. Two types of budget information may be printed out. When the budget generator is not used, the budget information includes only the livestock or orchard and vineyard information generated by the model and a cash flow summary. This is explained in 6.1 below. When the budget generator is used, the complete budgets for the first five years of the investment are printed out. This is explained in section 6.2 below.

6.1. Budget generator not used

6.1.1 LIVESTOCK SALES indicates the increase in cull cow and calf sales resulting from the increase in herd size due to the investment. The increase in number of cows sold is the number of purchased cows, purchased yearlings, and purchased replacements as well as raised cows and yearlings, which are part of the investment, that are culled. The value of the additional cows culled is calculated as the number culled multiplied by the price indicated on the Livestock Investment screen.

Increase in calves sold is calculated using assumption 2 and the increase in herd size, and is not rounded to the nearest whole animal. The value of calves is determined from assumption 1 and the cull price entered on the Livestock Investment screen.

6.1.2 EXPENSED DEVELOPMENT costs indicate the amount of development costs that were expensed, rather than capitalized, as requested by the user.

6.1.3 INPUT CASH FLOWS is the level of cash flows entered in the Cash Flow Section.

6.1.4 INCREASE IN CASH FLOW is the total increase in cash flow resulting from the investment. For investments including livestock, it is calculated as the input cash flow plus livestock sales. For orchard and vineyard investments, it is the input cash flow less expensed development costs. Increase in cash flow is the before-tax cash flow used in section 3.1 above.

6.2. Budget generator used

6.2.1 When the budget generator is used, values for all income and expense categories are printed out for each of the first five years of the investment. The method used to estimate each of the income and expense items is indicated in the section entitled Method of Estimating Cash Flow Values for Dairy Budget Generator, beginning on page 46.

6.2.2 INCREASE IN CASH FLOW indicates the amount that net income is increased by the investment over what it would be with the base year business under the same price, cost and inflation conditions. Under conditions of zero inflation, increase in cash flow is the difference between base year net income and budgeted year net income. However, if a positive rate of inflation is assumed, increase in cash flow is the budgeted year net income

minus base year net income calculated with the inflated prices and costs appropriate for the budgeted year. Increase in cash flow is the before-tax cash flow used in section 3.1 above.

7.0. The Financial Feasibility Analysis can be conducted at two levels: (1) for the complete farm business or (2) for the investment only and is printed for the first five years. If the analysis is conducted for the complete farm business, the heading for this section reads:

FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS

If financial feasibility relates only to the investment itself and the cash flows generated by that investment, the heading for this section reads:

FINANCIAL FEASIBILITY ANALYSIS: INVESTMENT ONLY

FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS

7.1.0 This analysis assesses the ability of the complete farm business including the proposed investment to make all of the debt payments that the business will have after the investment is made. Financial feasibility for the complete farm business is obtained by entering [C] on the pop-up window that accompanies Financial Feasibility on the Planning Information screen.

7.1.1 BEFORE-TAX CASH FLOW is the total net cash income for the business. This is the total amount of cash generated for payment of income taxes, family living, cash investment and debt payments.

If the budget generator is used, this is calculated as the NET INCOME for the complete business from section 6 of the output (Budget) plus any non-farm income indicated on page 3 of the Financial Feasibility screen. If the budget generator is not used, the BEFORE-TAX CASH FLOW is the sum of (1) the cash income generated by the investment, listed as BEFORE-TAX CASH FLOW in output section 3, (2) the annual net cash flow generated by the business without the investment, and (3) nonfarm income (from page 3 of the Financial Feasibility screen).

If values are being inflated, the budget generator inflation rates determine NET INCOME, nonfarm income is inflated by assumption 135 and cash flows entered in the Cash Flow Section are inflated by assumption 135.

7.1.2 TAXES PAID is the amount of State and Federal income tax that the business is expected to pay on the total income generated by the business after subtraction of State and Federal investment tax credit. This number can be negative if taxes were paid in any of the three years prior to investment, and the investment generates Federal investment tax credit that can be carried back. State taxes are calculated first and are subtracted from taxable income for calculation of Federal taxes to the extent that they plus other itemized deductions (Assumption 143, default value of $1,000) exceed the Federal standard deduction.

State Taxes

If the budget generator is not used, State taxable income is calculated as:

	Added taxable income from the investment (output section 3)
Plus	Expected net cash income without the investment (indicated on page 3 of the Financial Feasibility screens).
Plus	Annual nonfarm income.
Minus	Depreciation expected if the investment is not made.
Minus	Amount of livestock sales generated by the investment that is exempted due to capital gains treatment. The proportion subject to capital gain treatment is indicated by assumption 129. The percent exempted is assumption 133 (zero because of state adoption of rules in TRA86).
Minus	Amount of income without the investment that is exempted due to state capital gains treatment. The amount subject to capital gain treatment is indicated on page 3 of the Financial Feasibility Section and the proportion exempted is assumption 133 (zero because of TRA86).
Minus	Total interest paid during the year on all loans outstanding
Minus	The total value of personal exemptions based on the number of exemptions per family, the number of tax families and state exemption per person (assumption 131).

If there is more than one tax family, the average family income is determined by dividing total income by the number of tax families. The state taxes per family are calculated by subtracting the state standard deduction from average family income and applying the state tax rates from Section 1: Investment Planning Information. Total state tax payable is then the sum of the tax paid for all families plus state investment tax credit recapture on items that are part of the investment.

If the budget generator is used, state taxable income is the net income from the business (from budget section) (1) plus nonfarm income, (2) minus depreciation without the investment, (3) minus depreciation on the added investment, (4) minus interest paid, (5) minus livestock income from the business that is exempted from taxation due to capital gain treatment (livestock sales times assumption 129 times assumption 133), (6) minus personal exemptions as described above. State taxes payable are calculated from taxable income in the same manner as described above.

Actual state tax paid (whether or not the budget generator is used) is the state taxes payable minus state investment tax credit taken. The amount of state investment tax credit available in any year is (1) the amount indicated on page 3 of Financial Feasibility screens inflated by assumption 7, plus (2) the amount generated by the investment(s). Investment tax credit carryover is added to the available credit for the first year. Investment tax credit is used to reduce the state tax. The oldest available state ITC is used first.

Federal Taxes

If the budget generator is not used, Federal taxable income is calculated in the same manner as the state taxable income except that (1) the Federal capital gains exclusion is used (assumption 132), (2) the Federal standard deduction and personal exemptions are used and (3) the State taxes paid

that exceed the Federal standard deduction when added to assumption 143 are subtracted.

If the budget generator is used, Federal taxable income is the same as that used for calculating state taxes except that (1) Federal standard deduction, personal exemptions and capital gain rates are used and (2) itemized deductions (state taxes plus Assumption 143) are used if they exceed the Federal standard deduction.

Whether or not the budget generator is used, the Federal tax payable per family is calculated by dividing the Federal taxable income by the number of tax families and applying the Federal tax rates listed in Table 6, "Parameters Used in the Model." Total Federal tax payable is then determined as (1) the amount for each family multiplied by the number of families plus (2) Federal investment tax credit recapture on items that are part of the investment.

Federal tax paid is the Federal taxes payable minus the investment tax credit taken. The Federal investment tax credit carryover is assumed to have been generated evenly over the seven years preceding the investment. Investment tax credit generated each year of the planning period is the (1) amount generated by the investment, plus (2) Federal investment tax credit that would have been available without the investment (now zero because of TRA 1986). The oldest Federal investment tax credit is always used first. Federal ITC is used to reduce the Federal tax.

Total TAXES PAID is the sum of the State tax paid plus the Federal tax paid.

7.1.3 AFTER-TAX CASH FLOW is the before-tax cash flow minus the taxes paid. This represents the amount of cash available from the entire business for family living, debt service and cash investment.

7.1.4 LIVING EXPENSES is the amount entered on the Financial Feasibility screen inflated by assumption 134.

7.1.5 CASH AVAILABLE FOR DEBT is the after-tax cash flow minus the amount spent on family living.

7.1.6 DEBT PAYMENTS: SCHEDULED is the sum of the debt payments on all debt outstanding at the time the investment is made plus debt generated by the investment. Payments include both principal and interest. For any loans that are refinanced, the outstanding principal balance at the time of refinancing is used to determine the payments required from the date of refinancing forward.

7.1.7 DEBT PAYMENTS: INCLUDING MACHINERY REPLACEMENT is the scheduled debt payments plus the payments required on replacements for the existing machinery inventory that will be necessary in future years. The machinery investment required to replace the current machinery inventory comes from the input (Financial Feasibility Information, Page 3) and is inflated by the machinery inflation index (assumption 7). Replacement machinery is financed with the terms indicated in the input. These payments may be reduced by refinancing if so indicated on page 3 of the Financial Feasibility screen.

This line indicates the total future debt payments required to service currently existing debt, new debt that is part of the investment and debt that will have to be incurred in future years to maintain the current machinery inventory. Funds to maintain current livestock, land and building inventories should be included in operating expenses. No allowance is made for replacement of existing structures.

7.1.8 EXCESS OR DEFICIT indicates the amount by which the funds available for debt service deviate from the required debt payments. A deficit indicates the amount that living expenses would have to be reduced, expenses reduced or income increased in order to meet all debt payments.

7.1.9 OUTSTANDING DEBT indicates the amount of principal outstanding on all debts at the end of the year. INTERMEDIATE debt has a repayment term of less than assumption 141 (default value 10 years). LONG TERM LOANS are those loans with repayment periods of assumption 141 or more. MACHINERY REP. indicates the principal outstanding on funds borrowed to buy replacement machinery required to maintain the existing machinery inventory.

7.1.10 DEBT PAYMENTS indicate the breakdown of the total DEBT PAYMENTS: SCHEDULED INCL. MACH. REPLACEMENT listed above (see 7.1.6 and 7.1.7). The payments are the amounts paid on the corresponding outstanding principal indicated under outstanding debt.

7.1.11 FINANCING FROM EQUITY indicates the amount of funds required to make the investment that is provided from equity sources (not financed). This represents new equity capital investment in the business or funds that have been generated by the business in prior years that are currently not invested in the business.

FINANCIAL FEASIBILITY ANALYSIS: INVESTMENT ONLY

7.2.0 This analysis assesses the ability of the investment by itself to generate the funds necessary to make all payments resulting from the investment. This type of analysis is obtained by inserting [I] on the pop-up window on the Planning Information screen. For this analysis, data on current outstanding debt and the farm situation without the investment are omitted. The last line of the Financial Feasibility screen will normally be blank since an additional investment will not normally result in increased living expenses. However, if living expenses will increase <u>because of the investment</u>, then the amount of the <u>increase</u> is listed on that line.

7.2.1 BEFORE-TAX CASH FLOW is the cash flow generated by the investment and comes from (is the same as) the before-tax cash flow listed in section 3 (CASH FLOW) of the output.

7.2.2 TAXES PAID is the amount of Federal and State tax paid on the additional income generated by the investment. The Federal adjusted gross income and other tax information entered on the Planning Information screen, the State tax rates from Section 1: Investment Planning Information and the Federal tax rates listed in Table 6 (Parameters Used In The Model) are used to determine the added taxes that would result from income generated by the model. Taxes are calculated the same way as in the TAX column of Section 3 (CASH FLOW) except that interest on the debt used to acquire the investment is included in the calculation of taxable income resulting from the investment. See section 3.4 for a discussion of how these taxes are

calculated. Since the taxes payable represents the change in taxes paid by this business as a result of the investment, the amount can be either positive or negative.

The amount of tax actually paid is the amount of tax payable minus the investment tax credit used. The procedures listed in section 7.1.2 for application of Federal and State ITC are used, except that the only investment tax credit that is available is that generated by the investment. This ITC is listed in section 5 of output.

7.2.3 AFTER-TAX CASH FLOW is the before-tax cash flow minus the taxes paid. It indicates the amount generated by the investment for family living, debt service and cash investment.

7.2.4 LIVING EXPENSES indicates the increase in living expenses that result from the investment. This number frequently will be zero.

7.2.5 CASH AVAILABLE FOR DEBT indicates the amount generated by the investment that is available for debt service and cash investment.

7.2.6 DEBT PAYMENTS: SCHEDULED indicates the debt payments that result from the investment.

7.2.7 DEBT PAYMENTS: INCLUDING MACHINERY REPLACEMENT will always be the same as DEBT/PAYMENTS: SCHEDULED since replacement of existing machinery is not of concern when the financial feasibility of the investment by itself is being considered.

7.2.8 EXCESS OR DEFICIT indicates the difference between (1) the amount of cash available for debt payment that is generated by the investment and (2) the debt payments that result from the investment. It must be remembered that in this limited type of analysis, where only the results of the investment per se are being considered, a deficit may not mean that the business as a whole will not be able to make its debt payments. However, if a deficit exists, it indicates the amount of funds that will have to be generated by the rest of the business if payments are to be met. An excess indicates the contribution to the cash flow of the business that is provided by the investment.

7.2.9 OUTSTANDING DEBT indicates the debt outstanding as a result of the investment. Debt not caused by the investment is excluded. The definitions of intermediate and long-term loans are identical to those indicated in section 7.1.9. Machinery replacement will always be 0.

7.2.10 DEBT PAYMENTS indicate the breakdown of debt payments resulting from the investment. The payments correspond to the debt outstanding indicated above. Machinery replacement will always be 0.

7.2.11 FINANCING FROM EQUITY is the same as indicated in section 7.1.11.

WARNINGS

8.1 INVESTMENT TAX CREDIT EXCEEDS TAX TO BE PAID IN YEARS: In calculating the net present value of the investment, the model assumes that there is sufficient tax to be paid that all investment tax credit can be used in the year it becomes available, or that sufficient taxes have been paid in

previous years that the investment tax credit can be used by carrying the tax credit back to previous years. If financial feasibility is not used, the years for which the tax credit exceeds the total tax due from the business, including the investment, are determined. If there are any such years, the message shown above is printed followed by a listing of the specific years for which tax credit exceeds estimated tax.

8.2 LOSSES INCURRED BUT NOT CARRIED FORWARD OR BACK IN YEARS: Unprofitable investments, investments with large negative cash flow in one or more years or investments with a large amount of depreciation to be taken in one year can provide the business with losses (negative total taxable income, including income without the investment) in one or more years. Tax law allows these losses to be carried backward or forward. Since the level of taxable income in years previous to model year zero are unknown to the program and since losses frequently occur in the first few years, the model does not attempt to move losses forward or back. If there are losses, the message shown above is printed followed by a listing of the specific years in which losses occur.

8.3 Be careful in using the model to estimate the income impacts of inflation. Use of inflation with constant rates of inflation for all items, that is assumptions 54 and 29 both set to the same value, will make profitable investments more profitable and may make unprofitable investments either more or less profitable. In general, inflation will make the net cash flow larger in absolute value and will increase the terminal value of assets.

However, if differential rates of inflation for different items are used for a period of more than 5 to 10 years, some unexpected things may happen. An example appears in Table 4. In this case, both income and expense items have a weighted base year inflation rate of 5%. However, net income first increases and then decreases. The compounding effect of the higher inflation rate on the smaller item ultimately has a very significant impact. This is shown even more dramatically in Table 5, where the weighted base year inflation rate on expenses and income are each 6%. Net income increases for a few years and then declines rapidly to become significantly negative by year 20. Note that the inflation rates that were used were really not out of the range of values that might be encountered.

Table 4. IMPACT OF INFLATION ON NET INCOME
Example 1

Income or Expense	Inflation Rate	Year						
		0	1	2	5	10	15	20
Expense A	10	$10	11.00	12.10	16.11	25.94	41.77	67.28
Expense B	4	50	52.00	54.08	60.83	74.01	90.05	109.56
Total		60	63.00	66.18	76.94	99.95	131.82	176.84
Income	5 a/	75	78.75	82.69	95.92	122.17	155.92	199.00
Net Income		$15	15.75	16.51	18.78	22.22	24.10	22.16

a/ Weighted average of rates used for expenses.

Table 5. IMPACT OF INFLATION ON NET INCOME
Example 2

Income or Expense	Inflation Rate	Year 0	1	2	5	10	15	20
Expense A	16	$10	11.60	13.46	21.00	44.11	92.66	194.61
Expense B	4	50	52.00	54.08	60.83	74.01	90.05	109.56
Total		60	63.60	67.54	81.83	118.12	181.71	304.17
Income	6 a/	75	79.50	84.27	100.37	134.31	179.75	240.53
Net Income		$15	15.90	16.73	18.54	16.19	-2.96	-63.64

a/ Weighted average of rates used for expenses.

In trying to estimate future inflation rates, historical data are frequently very misleading. For example, during the early '70s, gas and oil prices increased very rapidly and everything we heard about energy prices led us to believe that the trend would likely continue. However, recent changes in gas and oil prices have not been much more rapid than changes in many other items.

Minor differences in the inflation rates used for income and expense items can materially change the relative profitability of farming in only a few years. This can significantly influence the apparent profitability of investments. Given the perfectly competitive nature of agriculture, there is little reason to believe that farming will suddenly become substantially more or less profitable and stay that way for a long period of time. We suggest that unless you are prepared to devote a lot of time to projecting inflation rates that your analysis is more likely to be correct if differential rates of inflation are not used. A general rate of inflation may be necessary to obtain appropriate cash flows.

If the base-year data represents an unusually profitable or unprofitable year relative to future expectations without the added investment, adjust base-year data rather than try to use projected inflation rates to project future profitability.

METHOD OF ESTIMATING CASH FLOW VALUES FOR BUDGET GENERATOR

The budget generator estimates each budget cash flow value individually. All budgeted values are based on the base year performance and other input data. The listing below indicates the method used to estimate each cash flow item. The procedures outlined do not include inflation adjustments. If values are to be inflated, they are calculated as indicated below and then modified to reflect the inflation rates indicated in assumptions 29 and 59 through 82.

EXPENSES

Labor	Labor is increased from base year value to the final value (input on Budget Projection data, page 2) in proportion to the increase in cow numbers unless assumption code 11 is set to 1 through 5. In this case, the total increase occurs in the year entered for assumption 11 (i.e., years 1 through 5).
Feed	Feed cost per cow, acres of corn per cow, acres of hay crops per cow and acres of other feed crops per cow are calculated for the base year. Feed cost for each year is calculated as base year feed cost per cow multiplied by the number of cows, plus or minus any deficit or excess acres of each crop multiplied by the feed value of that crop (assumption codes 12, 13 and 14). If feed crops were sold in the base year, the deficit is adjusted for that portion of feed crop acres used to produce crops sold. In addition, an allowance is made for feed crop sales generated by a change in acreage from base year data. If assumption code 15 is 0, any deficit in crop production will be subtracted from feed crop sales before feed costs are increased.
Machine hire	Cost per acre of corn, other feed crops, and non-feed crops (excluding hay) from base year multiplied by acres of corn, other feed crops, and nonfeed crops.
Machine repairs	Maximum of (1) cost per crop acre from base year multiplied by the number of crop acres in each year or (2) base year cost plus minimum marginal machine cost with increased herd number (assumption code 16) multiplied by number of cows.
Auto expense	Base year expense per cow times number of cows up to maximum percent increase indicated in assumption 17.
Gas and oil	Base year cost per acre times number of crop acres with a minimum percent increase equal to the percent increase in machine repairs.
Purchased replacements	Base year value. Replacement purchases made necessary by new investment in cattle are included in output section 4, under purchased cattle.
Breeding fees	Base year cost per cow times number of cows.
Veterinary and medicine	Base year cost per cow times number of cows.
Other livestock expense	Base year cost per cow times number of cows.

Lime and fertilizer — Data in assumption codes 18, 19 and 20 are used to calculate lime and fertilizer "corn equivalents 1." Lime and fertilizer per "corn equivalent 1" in base year is multiplied by "corn equivalent 1" acres for each year.

Seed and plants — Base year cost per "corn equivalent 2," calculated using assumptions 21, 22 and 23 multiplied by "corn equivalent 2" acres for each year.

Spray and other crop expense — Base year cost per "corn equivalent 3," calculated using assumptions 24, 25 and 26 multiplied by "corn equivalent 3" acres for each year.

Rent — Base year value plus rental indicated on page 2 of the Budget Projection Data section.

Telephone and Electricity — Cost per cow in base year times number of cows.

Miscellaneous — Same percent of total expense as in base year.

IF REAL ESTATE IS OWNED IN THE BASE YEAR

Land, building, and fence repair — Base year cost per dollar of real estate investment times total investment (base year value of real estate plus average value of buildings over their life plus land purchases).

Taxes — Base year cost per dollar of real estate investment times total real estate investment.

Insurance — Base year cost per dollar of real estate investment times total real estate investment.

IF REAL ESTATE IS NOT OWNED IN BASE YEAR (Market value of real estate before investment = 0)

Land, building, and fence repair — Land, buildings, and fence repair expense is estimated by multiplying assumption 83 by the value of land plus the depreciated value of buildings.

Taxes — Taxes are estimated by multiplying assumption 84 by the value of land purchased plus the depreciated value of buildings purchased.

Insurance — There will normally be a base-year entry for insurance even if there is no real estate. In this case the base year insurance entry is assumed to have been on cattle and machinery. An estimate of the value of the cattle and machinery is made by (1) using assumption 87 to determine machinery investment and (2) using the value per cow entered on the Livestock Investment screen, or if that is blank, assumption 86 to estimate the value of the

existing herd. The sum of these two investment items is divided into base year insurance costs to determine the insurance cost per dollar of investment for base year. Total investment in future years is calculated in a similar manner except that the value of purchased real estate plus the depreciated value of buildings is added to the total investment, and assumption 85 is used to weight the insurance cost on real estate investment relative to that for cows and machinery.

INCOME

Milk sales	Milk price in base year times amount of milk produced (number of cows times production level) as adjusted by assumptions 27 and 28.
Livestock sales	Base year livestock sales plus additional value of livestock sold as a result of livestock purchases included as part of the investment.
Crop sales from feed crops	Base year sales per feed crop acre (corn plus hay plus other feed crops) times number of feed crop acres, minus adjustments for feed deficit as indicated in feed costs. Base year sales = (crop sales) (1 - % of crop sales from nonfeed crops).
Nonfeed crop sales	Base year value per acre is calculated as total crop sales multiplied by "percent of crop sales from nonfeed crops" divided by number of acres of nonfeed crops. Budget value is the base year value per acre multiplied by acres of nonfeed crops for each year.
Miscellaneous	Same percent of total receipts as in base year.

Table 6. PARAMETERS USED IN THE MODEL

Federal Tax Rates:

Federal Taxable Income Over	But Not Over	Tax Rate a/
$ 0	$34,000 b/	.15
34,000 b/	82,150 b/	.28
82,150 b/		.31

a/ Rates are for 1991 and later.
b/ These values are indexed to inflation and change each year.

MACRS Recovery Percentage - 150% declining balance over the MACRS life for farm property:

	Years after Purchase										
Class	1	2	3	4	5	6	7	8	9	10	11
3 year	25.0	37.5	25.0	12.5							
5 year	15	25.5	17.85	16.66	16.66	8.33					
7 year	10.71	19.13	15.03	12.25	12.25	12.25	12.25	6.13			
10 year	7.5	13.88	11.79	10.02	8.74	8.74	8.74	8.74	8.74	8.74	4.37

	Years after Purchase											
Class	1	2	3	4	5	6	7	8	9-15	16	17-20	21
15 year b/	5.0	9.5	8.55	7.69	6.93	6.23	5.90	5.90	5.90	3.0		
20 year b/	3.75	7.22	6.68	6.18	5.71	5.28	4.89	4.52	4.46	4.46	4.46	2.25

b/ Assumes that 15 and 20 year property is purchased in the middle of the investor's tax year.

Recovery Periods Allowed for Straight Line MACRS:

Recovery Class	Allowed Recovery Periods (Years)
3 year	3 or 4
5 year	5, 6 or 7
7 year	7, 10 or 15
10 year	10 or 15
15 year	15 or 20
20 year	20 or 25
27.5 year	27.5 or 40

EXAMPLE 1: HENRY'S PROPOSED DAIRY HERD EXPANSION

Henry Holstein is the operator of a 130 cow dairy farm. Henry purchased his father's share of the farm 8 years ago. The barn and milking parlor are over 20 years old and rather outdated. He is considering a completely new freestall barn and milking center. The old dairy barn would be used for youngstock and storage. He is considering an expansion to 250 cows, including the purchase of 110 acres of cropland and rental of 60 acres at $40 per acre of cropland. Henry is interested in the profitability (net present value) of the investment as well as the financial feasibility of the investment.

Net Present Value

Since he expects the building and silo investments to last about 15 years, Henry will use a 15-year planning period. He has made the following estimates of the initial investment for land, buildings and equipment.

	Cost	Years to replacement	Salvage percent
Land (110 acres tillable)	95,000	--	100
Free Stall Barn	242,000	--	10
Milking center building	70,000	--	10
Silo	29,000	--	5
Parlor equipment	73,000	--	5
Bulk tank	30,000	--	5
Tractor	50,500	12	15
Forage harvester	33,000	10	5

All the depreciable items are 7-year MACRS property except the free stall barn which is 10-year property and he will use rapid (1.5 declining balance) MACRS depreciation. All these items will be purchased in year 0.

Henry's dairy herd had an average of 127 cows during the base year. He plans to expand to 200 cows in the first year and 250 in the second year. He plans to purchase 50 cows for $1300 each at year 0 and 40 more at year 1. The remainder will come from raised animals. The expected cull value per head is $540. The culling rate is expected to be 25 percent. At the end of the planning period he expects to have 70 more heifers than if he hadn't expanded the herd and the average value per heifer at the end of the planning period is expected to be $500.

Henry plans to change his cropping program as follows:

Crop	Base year	Year 1	Year 2 and beyond
		-----acres-----	
Corn	140	240	260
Hay	180	250	230
	320	490	

Planning Information for Section 1

Cost of Capital	12 percent
Federal Adjusted Gross Income without investment	30,000
Federal Standard Deduction	5,700
Federal Personal Exemption	2,150
28% Federal Tax rate begins at	34,000
Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)	4.00
Number of tax families	1
Average number of tax exemptions per tax family	5

Base Year Data for Budget Generator

A copy of Henry Holstein's farm business summary for last year is shown on page 54. Henry believes this was a relatively "normal" year (except for the milk price and a high lime expense), and thus, this business summary, with adjustments, will be used to construct the base year for the budget generator projections. The market value of the real estate before the investment is made is $390,000.

Adjustments and Assumptions

Henry expects that the price of milk will be at least $2.00 per cwt. lower in the future than in the year of the farm business summary. Therefore, in the base year data for the budget generator projections he has reduced the milk receipts by 127 cows x 189.23 cwt. per cow x $2.00 = $48,064. The base year milk receipts are $346,544 - 48,064 = $298,480. The reader should keep in mind that the reduction in milk price will affect the profitability of remaining at a herd size of 127 cows as well as the profitability of the business with a larger herd size.

In the year of the farm business summary, Henry's lime expense was about $2,000 higher than normal. In the base year data for the budget generator he has entered $10,508 rather than $12,508 to adjust the lime expense to a normal level.

Henry plans to have two additional full-time employees when the herd size is at 250 cows. He expects to pay about $20,000 per year per employee resulting in a total labor expense of about $86,497.

Henry has computed the feed value of an acre of corn at 110 bu. per acre x $2.60 = $286. He has entered this value using assumption code 12 in Section 9. The feed value of an acre of hay on his farm is 3.1 tons x $80 per ton = $248. This is entered in Section 9 using assumption code 13.

Henry expects that there will be continued inflation in the future. Like the rest of us, he doesn't know for sure what the inflation rate will be. His best estimate is that the inflation rate will average 4.0 percent on <u>all</u> investment items and on receipts and expenses. These inflation rates are entered in Section 9 using assumption codes 54 and 29.

Financial Feasibility

Henry is currently able to borrow money at 11% for 25 years for real estate purposes and at 10.5%, 7 years for nonreal estate purposes.

Henry has a 30-year mortgage (to his father) which was obtained eight years ago with an original principal of $200,000. The interest rate is 9 percent. This loan will not be refinanced. He also has a $120,000, 7-year, intermediate-term loan with a 10.5 percent interest rate obtained two years ago. This loan will not be refinanced.

Average annual amount that will be spent on replacement machinery in future years if the investment is not made	21,000
Annual depreciation if the investment is not made	22,000
Expected annual state investment credit without expansion	800
Estimated annual cash living expenses including Social Security taxes but not income taxes	23,000

Modifications

Analysis 2.

Henry believes that there is a substantial chance that milk prices will be lower relative to input costs in the future than the relationship used in Analysis 1 due to changes in the government price support program and the possible adoption of new output-increasing technology by dairy farmers. Analysis 2 will use a base year milk price $.50 per cwt. lower than the price used in Analysis 1. The base year milk receipts will be $298,480 - 12,016 = $286,464. The output for Analysis 2 begins on page 69.

Analysis 3.

Henry will use Analysis 3 to evaluate the financial feasibility of the investment alone, assuming the same milk price used in Analysis 2. This analysis does not require the data on current debts outstanding nor most of the data on page 3 of the Financial Feasibility Section. He changed [C] to [I] in Section 1 on the pop-up window related to Financial Feasibility which automatically deletes the data not required. Also, he does not expect the added investment to affect his living expenses so he has changed the increase in living expenses to 0 on the last line of the Financial Feasibility Section. The financial feasibility input and output for Analysis 3 are shown on pages 73 and 74.

Henry Holstein

Farm Business Summary

EXPENSES	
Labor	
Hired	46,497
Feed	
Dairy concentrate	82,406
Hay & other	0
Machinery	
Machine hire	2,533
Machine repair	13,565
Auto expense	563
Gas & oil	6,724
Livestock	
Replacement livestock	0
Breeding fees	4,257
Veterinary, medicine	6,377
Other livestock expense	23,450
Crops	
Lime & fertilizer*	12,508
Seeds & plants	4,568
Spray & other	4,441
Real Estate	
Land, building, fence repair	5,270
Taxes	6,784
Insurance	3,681
Rent	3,335
Other	
Telephone and Electricity (farm share)	7,515
Interest paid	26,268
Miscellaneous	3,957
TOTAL CASH EXPENSES	264,680
Expansion livestock	0
Machinery depreciation	18,245
Building depreciation	11,110
TOTAL EXPENSES	294,035

RECEIPTS	
Milk sales**	$346,544
Dairy cattle and calves	27,517
Crop Sales	14,919
Miscellaneous	5,241
TOTAL RECEIPTS	394,221

FINANCIAL SUMMARY	
Total farm receipts	394,221
Total farm expenses	294,035
NET FARM INCOME	100,186
Less: Interest on equity @ 5%	27,063
LABOR AND MANAGEMENT INCOME	73,123

CROP RECORD	acres	yield	Total
Hay and hay crop silage	180	3.1 t.	560 t.
Corn silage	60	18 t.	1080 t.
Corn grain	80	110 bu.	8800 bu.

Herd Information	
No. of Cows	127
Milk sold per cow	18,923

*Lime expenses in the year of the business summary were $2,000 higher than normal. Base year lime expense will be $12,508 - $2,000 = $10,508.

**Base year milk receipts have been adjusted to a price of $12.42 which is $2.00/cwt. below the price for the farm business summary year which was $14.42. Therefore, base year milk sales = $298,480.

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C  A  P  V  E  S  T     v1.2

Profitability and Financial Feasibility
of
Major Capital Investments

Developed by

Eddy L. LaDue and George Casler
Department of Agricultural Economics
Cornell University

1 - Create New Analysis
2 - Modify Existing Analysis
3 - Perform Investment Calculations

Enter Option No. [ ]

(** Press ALT-H for help; ESC to quit )
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Section 1:  Investment Planning Information

Problem analyzed for: [Henry Holstein          ]
Title ···············[Expand to 250 cows                    ]

  Planning Period (years) ·····································[15 ]
* Cost of Capital (e.g., 12.0 for 12%, decimal point required)··[12.00 ]
  Federal Adjusted Gross Income without investment ·····[30000   ]
* Federal Standard Deduction ·····························[5700  ]
* Federal Personal Exemption ·····························[2150  ]
* 28% Federal Tax rate begins at ·····[34000  ]
* Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)  [4.00  ]
  Number of tax families ··································[1  ]
  Average number of tax exemptions per tax family ·····[5  ]
* Modify State income tax brackets (Y/y)? ·····[Y]

 Include:  1) Livestock Investment Information  (Y/y) [y]
           2) Tree/Vine Investment Information  (Y/y) [ ]
           3) Financial Feasibility Information (Y/y) [Y]
           (Note: If Items 1, 2, and 3 are blank they are
            excluded from the analysis.)
```

Section 2: Building Investment Information

	Item A	Item B	Item C
Total Cost	[242000]	[70000]	[29000]
Year of Purchase	[0]	[0]	[0]
* Recovery Class	[10]	[10]	[7]
* Recovery Option Code	[1]	[1]	[1]
* Rec. Option Code on Replacement (if not to be replaced enter 9)	[9]	[9]	[9]
Does investment qualify for Federal investment tax credit? (0-no; 1-yes)	[0]	[0]	[0]
Does investment qualify for State investment tax credit? (0-no; 1-yes)	[1]	[1]	[1]
* Years to replacement (if not to be replaced, enter 0)	[0]	[0]	[0]
* Salvage percent (% of total cost)	[10]	[10]	[5]

Section 3: Equipment Investment Information

	Item A	Item B	Item C
Total Cost	[103000]	[50500]	[33000]
Year of Purchase	[0]	[0]	[0]
* Recovery Class	[7]	[7]	[7]
* Recovery option code	[1]	[1]	[1]
* Recovery option code on replacement (if not to be replaced enter 9)	[1]	[1]	[1]
Does investment qualify for Federal investment tax credit? (0-no; 1-yes)	[0]	[0]	[0]
Does investment qualify for State investment tax credit? (0-no; 1-yes)	[1]	[1]	[1]
* Years to replacement (if not to be replaced, enter 0)	[0]	[12]	[10]
* Salvage percent (% of total cost)	[5]	[15]	[5]

Section 4: Livestock Investment Information

Year Number	0	1	2	3	4	5
Number of cows in herd	130	200	250	250	250	250
* Number of cows purchased	50	40	0	0	0	X

* Cull Value per head	540
* Purchase Price per head	1300
Culling rate (percent)	25
% to be replaced with purchased animals	0
* Recovery Class	5

Year Number	0	1	2	3	4
* Recovery option code	1	1	1	1	1

Federal ITC (0-no; 1-yes)	0
State ITC (0-no; 1-yes)	1
* Cow value per head at end of planning period	1300
* Avg. value per heifer at end of planning period	500
Increase in number of heifers by end of planning period	70

Section 5: Land Investment Information

	Item A	Item B	Item C
Year of purchase	0		
Cost	95000		
* Terminal value at end of planning period	95000		

Note:

1. Enter depreciable real estate under building information or tree and vine information.
2. Include value of bare land purchased for tree and vine investment listed in tree and vine information section.

Section 7: Budget Projection Information Page 1

Base Year Expenses:

* Labor	[46497]	Other livestock expenses	[23450]
Feed	[82406]	Lime & fertilizer	[10508]
Machine hire	[2533]	Seeds and plants	[4568]
Machine repair	[13565]	Spray & other crop expense	[4441]
Auto expense	[563]	Land, bldg. & fence repair	[5270]
Gas & Oil	[6724]	Taxes	[6784]
* Purchased replacements	[0]	Insurance	[3681]
Breeding fees	[4257]	Rent	[3335]
Vet. & medicine	[6377]	Telephone & electric	[7515]
		Miscellaneous	[3957]

Base Year Income:

Milk sales	[298480]
Livestock sales	[27517]
Crop Sales	[14919]
Miscellaneous	[5241]

Section 7: Budget Projection Information Page 2

	Base Year	1	2	3	4	5
Hired labor costs in fifth year						[86479]
Acres of corn	[140]	[240	260	260	260	260]
Acres of hay crops	[180]	[250	230	230	230	230]
Acres of other feed crops	[0]	[0	0	0	0	0]
Acres of non-feed crops	[0]	[0	0	0	0	0]

Percent of crop sales from non-feed crops in base year	[0]
Market value of real estate before investment	[390000]
Pounds of milk per cow in base year	[18923]
Average number of cows in base year	[127]
Added crop acres rented	[60]
Year to start rent (1 - 5)	[1]
Rental rate per acre (whole dollars only)	[40]

Section 8: Financial Feasibility Page 1 of 3

	Credit Terms Available:	1	2	3	4
	Years to repay	[25]	[7]	[ ]	[ ]
*	Interest rate (e.g. 12.0 for 12%)	[11.0	[10.50		]
	Even principal and interest (=0) or even principal (=1)	[0]	[0]	[ ]	[ ]
	Number of payments per year	[12]	[12]	[ ]	[ ]

	Current Debt Outstanding:	Loan A	Loan B	Loan C	Loan D	Loan E
*	Amount ($)	[200000	[120000			]
	Amount is loan payment (=0) or original principal (=1)	[1]	[1]	[ ]	[ ]	[ ]
	Number of payments per year	[12]	[12]	[ ]	[ ]	[ ]
*	Yrs since loan taken (eg 6.0)	[8.0]	[2.0]	[ ]	[ ]	[ ]
	Original term of loan (yrs.)	[30]	[7]	[ ]	[ ]	[ ]
	Even principal & interest (=0) or even principal (=1) payments	[0]	[0]	[ ]	[ ]	[ ]
*	Interest rate (9.0 for 9%)	[9.00]	[10.50]	[ ]	[ ]	[ ]
	Refinance loan (0-no; 1-yes)	[0]	[0]	[ ]	[ ]	[ ]
	Credit Term used for refinancing (Credit Term 1, 2, 3, or 4)	[0]	[0]	[ ]	[ ]	[ ]

Section 8: Financial Feasibility Page 2

	Year:	0	1	2	3	4	5
	In what years will refinancing occur? (0 - no refinancing; 1 - refinancing) ·····	[0]	[0]	[0]	[0]	[0]	[0]

Year of refinancing debt incurred to replace existing machinery inventory (0 - not refinanced; 99 - every year) ····· [0]

Credit Terms used for new investment (1 - Credit Term 1, 2 - Credit Term 2, etc., or 5 - financed from equity)

Item:	A	B	C
Buildings ·····	[1]	[1]	[1]
Equipment ·····	[2]		
Livestock or Trees/Vines·	[2]		
Land ·····	[1]	[0]	[0]

Replacement of existing equipment (do not use 5) [2]

Section 8: Financial Feasibility Page 3

* Average annual amount that will be spent on replacement machinery in future years if the investment is not made	[21000]
Annual depreciation if the investment is not made	[22000]
If budget generator is not used:	
* Expected annual net cash flow if the investment is not made	[0]
Annual amount of income that qualifies for capital gains treatment if investment is not made	[0]
Investment credit carryover:	
Federal	[0]
State	[0]
Federal taxes paid during last three years that have not been offset by investment tax credit	[0]
* Expected annual investment credit without expansion:	
Federal	[0]
State	[800]
* Estimated annual cash living expenses including Social Security taxes but not income taxes	[23000]
* Expected annual nonfarm income	[0]

Section 9: Modification of Assumptions

Note: Include a decimal point with Assumption values, e.g., 4.0 when a value of four is needed.

	New Assumption value	Assumption Code
1.	[286.0]	[12]
2.	[248.0]	[13]
3.	[4.0]	[29]
4.	[4.0]	[54]
5.	[ ]	[ ]
6.	[ ]	[ ]
7.	[ ]	[ ]
8.	[ ]	[ ]
9.	[ ]	[ ]
10.	[ ]	[ ]
11.	[ ]	[ ]
12.	[ ]	[ ]
13.	[ ]	[ ]
14.	[ ]	[ ]
15.	[ ]	[ ]

*** CAPVEST v1.2 INPUT DATA ***

Problem analyzed for: Henry Holstein
Title .....: Expand to 250 cows

Section 1: PLANNING INFORMATION:

Planning Period	15
Cost of Capital	12.00
Federal Adjusted Gross Income	30000.
Federal Standard Deduction	5700.
Federal Personal Exemption	2150.
28% Federal tax rate begins at	34000.
Rate of inflation for Federal tax indexing	4.
Number of tax families	1.
Average number of tax exemptions per tax family	5.

Section 2: BUILDING INVESTMENT INFORMATION:

	Item A	Item B	Item C
Total Cost	242000.	70000.	29000.
Year of Purchase	0.	0.	0.
Recovery Class	10.	10.	7.
Recovery Option Code	1.	1.	1.
Rec. Opt. Cd on repl	9.	9.	9.
Qualify for Federal ITC	0.	0.	0.
Qualify for State ITC	1.	1.	1.
Years to replacement	0.	0.	0.
Salvage percent	10.	10.	5.

Section 3: EQUIPMENT INVESTMENT INFORMATION:

	Item A	Item B	Item C
Total Cost	103000.	50500.	33000.
Year of Purchase	0.	0.	0.
Recovery Class	7.	7.	7.
Recovery Option Code	1.	1.	1.
Rec. Opt. Cd on repl	1.	1.	1.
Qualify for Federal ITC	0.	0.	0.
Qualify for State ITC	1.	1.	1.
Years to replacement	0.	12.	10.
Salvage percent	5.	15.	5.

Section 4: LIVESTOCK INVESTMENT INFORMATION:

Year Number	0	1	2	3	4	5
Avg. # of cows owned	130.	200.	250.	250.	250.	250.
Number of cows purchased	50.	40.	0.	0.	0.	

Cull value per head	540.
Purchase price per head	1300.
Culling rate, percent	25.
% to be replaced with purchased animals	0.
Recovery Class	5.

Year Number	0	1	2	3	4
Recovery option code	1.	1.	1.	1.	1.

Federal ITC (0 - no ; 1 - yes)	0.
State ITC (0 - no ; 1 - yes)	1.
Cow value at end of planning period	1300.
Avg. value/heifer at end of planning period	500.
Inc. in # of heifers by end of planning period	70.

Section 5: LAND INVESTMENT INFORMATION:

	Item A	Item B	Item C
Year of Purchase	0.	0.	0.
Cost	95000.	0.	0.
Terminal value at end of planning period	95000.	0.	0.

Section 7: BUDGET PROJECTION DATA: Page 1

Base Year Expenses:

Labor	46497.	Other livestock expenses	23450.
Feed	82406.	Lime & fertilizer	10508.
Machine Hire	2533.	Seeds and plants	4568.
Machine Repair	13565.	Spray & other crop expense	4441.
Auto Expense	563.	Land, bldg. & fence repair	5270.
Gas & Oil	6724.	Taxes	6784.
Purchased Replacements	0.	Insurance	3681.
Breeding Fees	4257.	Rent	3335.
Vet. & Medicine	6377.	Telephone and electric	7515.
		Miscellaneous	3957.

Base Year Income:

Milk sales	298480.
Livestock sales	27517.
Crop Sales	14919.
Miscellaneous	5241.

ADDITIONAL BUDGET PROJECTION INFORMATION Page 2

	Base Year	1	2	3	4	5
Hired Labor Cost						86479.
Acres of Corn	140.	240.	260.	260.	260.	260.
Acres of Hay Crops	180.	250.	230.	230.	230.	230.
Acres of other Feed Crops	0.	0.	0.	0.	0.	0.
Acres of non-feed Crops	0.	0.	0.	0.	0.	0.

Pct. crop sales from non-feed crops in base year	0.
Market value of real estate before investment	390000.
Pounds of milk per cow in base year	18923.
Average number of cows in base year	127.
Added crop acres rented	60.
Year to start rent (1-5)	1.
Rental rate per acre	40.

Section 8: FINANCIAL FEASIBILTY INFORMATION: Page 1

Credit Terms:	1	2	3	4
Years to repay	25.	7.	0.	0.
Interest rate	11.00	10.50	.00	.00
Even principal and interest (=0) or even principal (=1)	0.	0.	0.	0.
Number of payments per year	12.	12.	0.	0.

Current Debt Outstanding:	Loan A	Loan B	Loan C	Loan D	Loan E
Amount ($)	200000.	120000.	0.	0.	0.
Amount is loan payment (=0) or original principal (=1)	1.	1.	0.	0.	0.
Number of payments per year	12.	12.	0.	0.	0.
Years since loan was taken	8.0	2.0	.0	.0	.0
Original term of loan (yrs)	30.	7.	0.	0.	0.
Even principal $ interest (=0) or even principal (=1) payments	0.	0.	0.	0.	0.
Interest Rate	9.00	10.50	.00	.00	.00
Refinance loan (0 - no; 1 - yes)?	0.	0.	0.	0.	0.
Credit term used for refinancing (Credit term 1, 2, or 4)	0.	0.	0.	0.	0.

FINANCIAL FEASIBILITY INFORMATION: Page 2

Year	0	1	2	3	4	5
In what years will refinancing occur? (0 - no refinancing; 1 - refinancing)	0.	0.	0.	0.	0.	0.

Year of refinancing debt incurred to replace existing machinery inventory (0 - not refinanced; 99 - every year) 0.

Credit terms used for new investment
(1 - Credit Term 1, 2 - Credit Term 2, etc; or 5 - refinanced from equity

Group:	A	B	C
Buildings	1.	1.	1.
Equipment 2.			
Livestock or Trees/Vines 2.			
Land	1.	0.	0.

Replacement of existing equipment (do not use 5) 2.

FINANCIAL FEASIBILITY INFORMATION: Page 3

Average annual amount that will be spent on replacement machinery in future years if the investment is not made	21000.
Annual depreciation if the investment is not made	22000.
If budget generator is not used:	
Expected annual net cash flow if the investment is not made	0.
Annual amount of income that qualifies for capital gains treatment if investment is not made	0.
Investment credit carryover:	
Federal	0.
State	0.
Federal taxes paid during last three years that have not been offset by investment tax credit	0.
Expected annual investment credit without expansion:	
Federal	0.
State	800.
Estimated annual cash living expenses excluding taxes	23000.
Expected annual nonfarm income	0.

Section 9: MODIFICATION OF ASSUMPTIONS:

	New Assumption value	Assumption Code
1	286.0	12
2	248.0	13
3	4.0	29
4	4.0	54

*** END OF INPUT DATA ***

*** INVESTMENT ANALYSIS ***
NAME: Henry Holstein
TITLE: Expand to 250 cows
1. NET PRESENT VALUE OF INVESTMENT ($) IS: 26539.
2. PERCENT AFTER TAX COST OF CAPITAL IS: 9.3
3. CASH FLOW:

YEAR	BEFORE TAX CASH FLOW	DEPRE-CIATION	TAXABLE INCOME	TAX	AFTER TAX CASH FLOW	PRESENT VALUE
1	40480.	55099.	-31519.	-2950.	43429.	39734.
2	74544.	102594.	-53725.	-3103.	77647.	64995.
3	85598.	83802.	-15119.	-3099.	88697.	67928.
4	97418.	66598.	23014.	4944.	92473.	64794.
5	102524.	60165.	38097.	10002.	92522.	59312.
6	107992.	57203.	48891.	13672.	94319.	55320.
7	111601.	54591.	56740.	16308.	95293.	51135.
8	117543.	40479.	77064.	23305.	94238.	46266.
9	120708.	27269.	93439.	28665.	92042.	41343.
10	124736.	27269.	97468.	29907.	94829.	38971.
11	130557.	18604.	111953.	34732.	95826.	36030.
12	135780.	8877.	126902.	39866.	95913.	32994.
13	142110.	14335.	127775.	39948.	102162.	32153.
14	146859.	18832.	128028.	39799.	107060.	30828.
15	152734.	16014.	136720.	42664.	110070.	28998.
TOTAL						690803.

4. INVESTMENTS (OUTLAY):

YEAR	BUILDINGS	EQUIPMENT	CATTLE PURCHASED	CATTLE RAISED	LAND	TOTAL	PRESENT VALUE
0	341000.	186500.	74360.	23400.	95000.	720260.	720260.
1	0.	0.	60570.	12168.	0.	72738.	66549.
10	0.	46406.	0.	0.	0.	46406.	19071.
12	0.	68724.	0.	0.	0.	68724.	23641.
					TOTAL		829521.
TERMINAL VALUE:							
BEFORE TAX	58801.	101000.	343980.		171090.	674871.	177794.
AFTER TAX	43630.	88384.	255233.		151459.	538706.	141922.

5. INVESTMENT TAX CREDIT:

YEAR	CREDIT	RECAPTURE	NET
1	24074.	541.	23534.
2	2423.	797.	1626.
3	0.	495.	-495.
4	0.	203.	-203.
5	0.	69.	-69.
6	0.	4.	-4.
11	1856.	0.	1856.
13	2749.	0.	2749.
15	0.	2101.	-2101.

PRESENT VALUE OF NET INVESTMENT TAX CREDIT IS: 23334.

6. BUDGET:

ITEM	YEAR 1	2	3	4	5
LABOR	73035.	93536.	97277.	101168.	105215.
FEED	134964.	181862.	189136.	196702.	204570.
MACHINE HIRE	4516.	5088.	5292.	5503.	5723.
MACHINE REPAIRS	21602.	23818.	24771.	25762.	26792.
AUTO EXPENSE	922.	1199.	1247.	1297.	1348.
GAS & OIL	10708.	11806.	12279.	12770.	13281.
PURCHASED REPLACEMENTS	0.	0.	0.	0.	0.
BREEDING FEES	6972.	9064.	9426.	9803.	10195.
VET & MEDICINE	10444.	13577.	14121.	14685.	15273.
OTHER LIVESTOCK	38406.	49928.	51925.	54002.	56162.
LIME & FERT	17869.	19506.	20286.	21097.	21941.
SEEDS & PLANTS	7539.	8056.	8378.	8713.	9061.
SPRAY & OTHER CROP	7330.	7832.	8145.	8471.	8809.
LAND, BUILD, REPAIRS	9441.	9819.	10212.	10620.	11045.
TAXES	12154.	12640.	13146.	13671.	14218.
INSURANCE	7479.	8212.	8541.	8882.	9238.
RENT	5964.	6203.	6451.	6709.	6978.
TELEPHONE & ELECTRICITY	12308.	16000.	16640.	17306.	17998.
MISC. EXPENSES	6496.	8139.	8464.	8803.	9155.
TOTAL EXPENSES	388151.	486284.	505736.	525965.	547004.
MILK SALES	472303.	617987.	651264.	686215.	714855.
LIVESTOCK SALES	40613.	51233.	52674.	54150.	56316.
CROP SALES - FEED	21611.	0.	0.	0.	0.
CROP SALES - NON-FEED	0.	0.	0.	0.	0.
MISC. INCOME	8217.	10288.	10822.	11382.	11855.
TOTAL INCOME	542746.	679507.	714761.	751747.	783027.
NET INCOME	154595.	193223.	209025.	225782.	236023.
INCREASE IN CASH FLOW	40480.	74544.	85598.	97418.	102524.
NUMBER OF COWS	200.	250.	250.	250.	250.
PRODUCTION PER COW (LBS)	18283.	18401.	18646.	18891.	18923.

7. FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	154595.	193223.	209025.	225782.	236023.
TAXES PAID	0.	0.	0.	3229.	6617.
AFTER-TAX CASH FLOW	154595.	193223.	209025.	222553.	229406.
LIVING EXPENSES	23920.	24877.	25872.	26907.	27983.
CASH AVAILABLE FOR DEBT	130675.	168346.	183153.	195646.	201423.
DEBT PAYMENTS: SCHEDULED	147649.	159904.	159904.	159904.	159904.
INCL. MACH. REPLACEMENT	147649.	164323.	168918.	173698.	178668.
EXCESS OR DEFICIT	-16974.	4024.	14235.	21948.	22755.

DEBT SUMMARY (SCHEDULED):

	0	YEAR 1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	354993.	373806.	321261.	262926.	198162.	126260.
LONG TERM LOANS	620721.	614430.	607471.	599775.	591261.	581842.
MACHINERY REP.		21839.	42321.	61146.	77975.	92423.
TOTAL	975714.	1010075.	971054.	923847.	867397.	800525.
DEBT PAYMENTS:						
INTERMEDIATE		77059.	89314.	89314.	89314.	89314.
LONG TERM LOANS		70590.	70590.	70590.	70590.	70590.
MACHINERY REP.		0.	4419.	9014.	13794.	18764.
* * * *						
FINANCING FROM						
EQUITY	0.	0.	0.	0.	0.	0.

*** END OF ANALYSIS ***

*** INVESTMENT ANALYSIS ***

NAME: Henry Holstein

TITLE: Expand to 250 cows: Analysis 2

1. NET PRESENT VALUE OF INVESTMENT ($) IS: -71676.
2. PERCENT AFTER TAX COST OF CAPITAL IS: 9.6
3. CASH FLOW:

YEAR	BEFORE TAX CASH FLOW	DEPRE-CIATION	TAXABLE INCOME	TAX	AFTER TAX CASH FLOW	PRESENT VALUE
1	33960.	55099.	-38039.	-2950.	36910.	33677.
2	62641.	102594.	-65628.	-3103.	65744.	54731.
3	72874.	83802.	-27843.	-3262.	76136.	57831.
4	83825.	66598.	9421.	1954.	81871.	56740.
5	88340.	60165.	23913.	5163.	83177.	52596.
6	93240.	57203.	34139.	8509.	84731.	48885.
7	96259.	54591.	41398.	10938.	85321.	44914.
8	101588.	40479.	61109.	17721.	83867.	40282.
9	104114.	27269.	76845.	23107.	81007.	35500.
10	107479.	27269.	80210.	24138.	83341.	33324.
11	112610.	18604.	94005.	28665.	83944.	30625.
12	117114.	8877.	108237.	33266.	83848.	27910.
13	122698.	14335.	108363.	33202.	89496.	27181.
14	126671.	18832.	107839.	32919.	93752.	25980.
15	131737.	16014.	115723.	35409.	96328.	24355.
TOTAL						594530.

4. INVESTMENTS (OUTLAY):

YEAR	BUILDINGS	EQUIPMENT	CATTLE PURCHASED	CATTLE RAISED	LAND	TOTAL	PRESENT VALUE
0	341000.	186500.	74360.	23400.	95000.	720260.	720260.
1	0.	0.	60570.	12168.	0.	72738.	66366.
10	0.	46406.	0.	0.	0.	46406.	18555.
12	0.	68724.	0.	0.	0.	68724.	22876.
					TOTAL		828058.
TERMINAL VALUE:							
BEFORE TAX	58801.	101000.	343980.		171090.	674871.	170633.
AFTER TAX	44689.	89264.	261425.		152828.	548206.	138607.

5. INVESTMENT TAX CREDIT:

YEAR	CREDIT	RECAPTURE	NET
1	24074.	541.	23534.
2	2423.	797.	1626.
3	0.	495.	-495.
4	0.	203.	-203.
5	0.	69.	-69.
6	0.	4.	-4.
11	1856.	0.	1856.
13	2749.	0.	2749.
15	0.	2101.	-2101.

PRESENT VALUE OF NET INVESTMENT TAX CREDIT IS: 23245.

6. BUDGET:

ITEM	YEAR 1	2	3	4	5
LABOR	73035.	93536.	97277.	101168.	105215.
FEED	134964.	181862.	189136.	196702.	204570.
MACHINE HIRE	4516.	5088.	5292.	5503.	5723.
MACHINE REPAIRS	21602.	23818.	24771.	25762.	26792.
AUTO EXPENSE	922.	1199.	1247.	1297.	1348.
GAS & OIL	10708.	11806.	12279.	12770.	13281.
PURCHASED REPLACEMENTS	0.	0.	0.	0.	0.
BREEDING FEES	6972.	9064.	9426.	9803.	10195.
VET & MEDICINE	10444.	13577.	14121.	14685.	15273.
OTHER LIVESTOCK	38406.	49928.	51925.	54002.	56162.
LIME & FERT	17869.	19506.	20286.	21097.	21941.
SEEDS & PLANTS	7539.	8056.	8378.	8713.	9061.
SPRAY & OTHER CROP	7330.	7832.	8145.	8471.	8809.
LAND, BUILD, REPAIRS	9441.	9819.	10212.	10620.	11045.
TAXES	12154.	12640.	13146.	13671.	14218.
INSURANCE	7479.	8212.	8541.	8882.	9238.
RENT	5964.	6203.	6451.	6709.	6978.
TELEPHONE & ELECTRICITY	12308.	16000.	16640.	17306.	17998.
MISC. EXPENSES	6496.	8139.	8464.	8803.	9155.
TOTAL EXPENSES	388151.	466284.	505736.	525965.	547004.
MILK SALES	453290.	593108.	625046.	658590.	686077.
LIVESTOCK SALES	40613.	51233.	52674.	54150.	56316.
CROP SALES - FEED	21611.	0.	0.	0.	0.
CROP SALES - NON-FEED	0.	0.	0.	0.	0.
MISC. INCOME	8215.	10268.	10799.	11357.	11830.
TOTAL INCOME	523729.	654608.	688520.	724097.	754223.
NET INCOME	135578.	168324.	182784.	198132.	207219.
INCREASE IN CASH FLOW	33960.	62641.	72874.	83825.	88340.
NUMBER OF COWS	200.	250.	250.	250.	250.
PRODUCTION PER COW (LBS)	18283.	18401.	18646.	18891.	18923.

7. FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	135578.	168324.	182784.	198132.	207219.
TAXES PAID	0.	0.	0.	0.	2105.
AFTER-TAX CASH FLOW	135578.	168324.	182784.	198132.	205114.
LIVING EXPENSES	23920.	24877.	25872.	26907.	27983.
CASH AVAILABLE FOR DEBT	111658.	143447.	156912.	171225.	177131.
DEBT PAYMENTS: SCHEDULED	147649.	159904.	159904.	159904.	159904.
INCL. MACH. REPLACEMENT	147649.	164323.	168918.	173698.	178668.
EXCESS OR DEFICIT	-35991.	-20875.	-12006.	-2472.	-1537.

DEBT SUMMARY (SCHEDULED):

	0	YEAR 1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	354993.	373806.	321261.	262926.	198162.	126260.
LONG TERM LOANS	620721.	614430.	607471.	599775.	591261.	581842.
MACHINERY REP.		21839.	42321.	61146.	77975.	92423.
TOTAL	975714.	1010075.	971054.	923847.	867397.	800525.
DEBT PAYMENTS:						
INTERMEDIATE		77059.	89314.	89314.	89314.	89314.
LONG TERM LOANS		70590.	70590.	70590.	70590.	70590.
MACHINERY REP.		0.	4419.	9014.	13794.	18764.
FINANCING FROM EQUITY	0.	0.	0.	0.	0.	0.

* * * *

*** END OF ANALYSIS ***

ANALYSIS 3

Analysis 3 considers the financial feasibility of the investment only as described on page 21. This analysis considers whether the added cash flow resulting from the investment would make the payments on the added debt required to obtain the investment. The net present value will not change from that of Analysis 2. Therefore, only the required financial feasibility information and the financial feasibility output are shown on this page and the next page.

Section 8: Financial Feasibility - Investment Only

Credit Terms Available:	1	2	3	4
Years to repay	[25]	[7]	[ ]	[ ]
Interest rate (e.g., 12.50 for 12½%)	[11.00	[10.50	[	[ ]
Even principal and interest (=0) or even principal (=1)	[0]	[0]	[ ]	[ ]
Number of payments per year	[12]	[12]	[ ]	[ ]

Year	1	2	3	4	5
In what years will refinancing occur (0 - no refinancing; 1 - refinancing)?	[0]	[0]	[0]	[0]	[0]

Credit Terms used for new investment
(1 - Credit Term 1, 2 - Credit Term 2, etc., 5 - financed from equity)

Item:	A	B	C
Buildings	[1]	[1]	[1]
Equipment	[2]		
Livestock or Trees/Vines	[2]		
Land	[1]	[0]	[0]

* Increase in estimated annual cash living expenses including Social Security taxes but not income taxes ..... [0]

7. FINANCIAL FEASIBILITY ANALYSIS: INVESTMENT ONLY.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	33960.	62641.	72874.	83825.	88340.
TAXES PAID	-295.	-108.	-481.	-848.	-1059.
AFTER-TAX CASH FLOW	34255.	62749.	73355.	84673.	89399.
LIVING EXPENSES	0.	0.	0.	0.	0.
CASH AVAILABLE FOR DEBT	34255.	62749.	73355.	84673.	89399.
DEBT PAYMENTS: SCHEDULED	104059.	116314.	116314.	116314.	116314.
INCL. MACH. REPLACEMENT	104059.	116314.	116314.	116314.	116314.
EXCESS OR DEFICIT	-69804.	-53565.	-42958.	-31641.	-26915.

DEBT SUMMARY (SCHEDULED):

	YEAR 0	1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	260860.	294782.	259011.	219298.	175208.	126260.
LONG TERM LOANS	436000.	432508.	428612.	424265.	419415.	414003.
MACHINERY REP.		0.	0.	0.	0.	0.
TOTAL	696860.	727290.	687623.	643563.	594623.	540263.
DEBT PAYMENTS:						
INTERMEDIATE		52779.	65034.	65034.	65034.	65034.
LONG TERM LOANS		51280.	51280.	51280.	51280.	51280.
MACHINERY REP.		0.	0.	0.	0.	0.
* * * *						
FINANCING FROM EQUITY	0.	0.	0.	0.	0.	0.

*** END OF ANALYSIS ***

EXAMPLE 2: APPLE'S PROPOSED ORCHARD DEVELOPMENT

Apple Grower, the operator of a fruit farm, is considering replanting part of his orchard (20 acres) with a new high-density, four-wire trellis orchard.

Net Present Value

Apple expects the orchard to be productive for 18 years once it comes into production. There will be a year of preparation and two years of development costs and the first crop will be harvested in the third year. At the end of the 21-year planning period it is likely to be removed and replanted again.

Preparation cost in year 1 is $641 per acre. The establishment cost is $3,927 per acre in year 2. Development costs are $423 per acre in the first year (year of establishment) and $812 in the second year. The first crop is expected to be harvested in year 4. The trellis cost is $1,200 per acre in year 2 (entered under buildings).

The projected yields, prices and costs per acre for the four-wire trellis orchard are shown below. The land on which the 20-acre orchard will be planted is worth $1,000 per acre.

Trees per acre	605
Mature yield = 1.65 bu./tree x 605 trees = 998 bu./acre	
Price/bu.	$5.00
Harvest cost per bu.	$1.35

Year	Yield per Acre	Gross Income	Growing Cost	Harvest Cost	Net Cash Flow
1	0		*		*
2	0		*		*
3	0		*		*
4	121	605	837	163	-395
5	242	1210	909	327	-26
6	363	1815	856	490	469
7	605	3025	814	817	1394
8	756	3780	722	1021	2037
9	908	4540	759	1226	2555
10	998	4990	759	1347	2884
11	998	4990	759	1347	2884
12	998	4990	759	1347	2884
13	998	4990	759	1347	2884
14	998	4990	759	1347	2884
15	998	4990	759	1347	2884
16	998	4990	759	1347	2884
17	998	4990	759	1347	2884
18	998	4990	759	1347	2884
19	998	4990	759	1347	2884
20	998	4990	759	1347	2884
21	998	4990	759	1347	2884

*See text for preparation, establishment, and development costs in years 1, 2, and 3.

Other data needed to complete the analysis are shown on the input form.

Planning Information for Section 1

Cost of Capital	12 percent
Federal Adjusted Gross Income without investment	40,000
Federal Standard Deduction	5,700
Federal Personal Exemption	2,150
28% Federal Tax rate begins at	34,000
Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)	4.50
Number of tax families	1
Average number of tax exemptions per tax family	4

Financial Feasibility

Apple currently has a 20-year mortgage obtained two years ago with an interest rate of 12 percent and an original principal of $200,000. He also has a seven-year equipment loan obtained one year ago with an original principal of $100,000 and interest rate of 11 percent. These loans have annual payments and will not be refinanced.

The only credit available with which to finance replanting of the orchard is a seven-year loan at 11 percent interest with annual payments.

Average annual amount that will be spent on replacement machinery in future years if the investment is not made	25,000
Annual depreciation if the investment is not made	23,000
Expected annual state investment credit without expansion	1,000
Estimated annual cash living expenses including Social Security taxes but not income taxes	30,000

Modifications

Analysis 2.

The second analysis considers the effect of a 10 percent lower apple yield in each year. This affects the harvest cost (which is on a per bushel basis) as well as the income from apple sales. Only the cash flow changes, as shown on page 88. The output for Analysis 2 begins on page 87.

Analysis 3.

The third analysis uses a 15 percent (rather than 12 percent) discount rate. The higher discount rate is an attempt to adjust for the relatively high uncertainty associated with the levels of apple prices and yields over the 20-year planning period. This analysis also includes the 10 percent lower yields used in analysis 2. The input for Analysis 3 is on page 91.

```
          Section 1:   Investment Planning Information

Problem analyzed for: [Apple Grower            ]
Title ·····[20 Acres of 4-wire Trellis                ]

  Planning Period (years) ·····[21 ]
* Cost of Capital (e.g., 12.0 for 12%, decimal point required)··[12.00 ]
  Federal Adjusted Gross Income without investment ·····[40000   ]
* Federal Standard Deduction ·····[5700  ]
* Federal Personal Exemption ·····[2150  ]
* 28% Federal Tax rate begins at ·····[34000  ]
* Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)  [4.50  ]
  Number of tax families ·····[1  ]
  Average number of tax exemptions per tax family ·····[4  ]
* Modify State income tax brackets (Y/y)? ·····[Y]

 Include:  1) Livestock Investment Information  (Y/y) [ ]
           2) Tree/Vine Investment Information  (Y/y) [y]
           3) Financial Feasibility Information (Y/y) [Y]
           (Note: If Items 1, 2, and 3 are blank they are
            excluded from the analysis.)
```

```
          Section 2:     Building Investment Information

                                          Item A    Item B    Item C

  Total Cost ·····[24000   ][        ][        ]
  Year of Purchase ·····[2  ]    [   ]    [   ]
* Recovery Class ·····[10   ]   [     ]   [     ]
* Recovery Option Code ·····[4 ]     [  ]      [  ]
* Rec. Option Code on Replacement
    (if not to be replaced enter 9) ·····[9 ]     [  ]      [  ]

  Does investment qualify for Federal
   investment tax credit? (0-no; 1-yes) ·····[0 ]     [  ]      [  ]

  Does investment qualify for State
   investment tax credit? (0-no; 1-yes) ·····[1 ]     [  ]      [  ]

* Years to replacement
   (if not to be replaced, enter 0) ·····[0  ]    [   ]    [   ]

* Salvage percent (% of total cost) ·····[0  ]    [   ]    [   ]
```

Section 4: Tree and Vine Investment Information

	Variety A	Variety B
Development and Preparation costs expensed (=1) or capitalized (=0)	[1]	[0]
* Income tax recovery option used	[4]	[0]
* Skip preparation year (0=no; 1=yes)	[0]	[0]
Acres to be established: Yr. 2	[20]	Yr. 2 [0]
3	[0]	3 [0]
4	[0]	4 [0]
5	[0]	5 [0]
Land value per acre (if land is not part of investment)	[1000]	[0]
Preparation cost per acre	[641]	[0]
Establishment cost per acre	[3927]	[0]
* Development cost per acre: Yr. 1	[423]	[0]
2	[812]	[0]
3	[0]	[0]
4	[0]	[0]
5	[0]	[0]
* Terminal value of trees and vines per acre	[0]	[0]

Section 6: Projected Increase in Cash Flow

	Amount	Years
1.	[0]	*[3]
2.	[-7900]	[1]
3.	[-520]	[1]
4.	[9380]	[1]
5.	[27880]	[1]
6.	[40740]	[1]
7.	[51110]	[1]
8.	[57680]	[12]
9.	[ ]	[ ]
10.	[ ]	[ ]

Note:

1. Enter increase in cash flow before income taxes (projected increase in cash receipts minus increase in cash expenses; do not include increased sales of calves and cull cows nor the cost of added purchased replacements).

Section 8: Financial Feasibility Page 1 of 3

	Credit Terms Available:	1	2	3	4
	Years to repay	[7]	[ ]	[ ]	[ ]
*	Interest rate (e.g. 12.0 for 12%)	[11.00]	[ ]	[ ]	[ ]
	Even principal and interest (=0) or even principal (=1)	[0]	[ ]	[ ]	[ ]
	Number of payments per year	[1]	[ ]	[ ]	[ ]

	Current Debt Outstanding:	Loan A	Loan B	Loan C	Loan D	Loan E
*	Amount ($)	[150000]	[80000]	[ ]	[ ]	[ ]
	Amount is loan payment (=0) or original principal (=1)	[1]	[1]	[ ]	[ ]	[ ]
	Number of payments per year	[1]	[1]	[ ]	[ ]	[ ]
*	Yrs since loan taken (eg 6.0)	[6.0]	[1.0]	[ ]	[ ]	[ ]
	Original term of loan (yrs.)	[20]	[7]	[ ]	[ ]	[ ]
	Even principal & interest (=0) or even principal (=1) payments	[0]	[0]	[ ]	[ ]	[ ]
*	Interest rate (9.0 for 9%)	[12.00]	[11.00]	[ ]	[ ]	[ ]
	Refinance loan (0-no; 1-yes)	[0]	[0]	[ ]	[ ]	[ ]
	Credit Term used for refinancing (Credit Term 1, 2, 3, or 4)	[0]	[0]	[ ]	[ ]	[ ]

Section 8: Financial Feasibility Page 2

	Year:	0	1	2	3	4	5
	In what years will refinancing occur? (0 - no refinancing; 1 - refinancing)	[0]	[0]	[0]	[0]	[0]	[0]

Year of refinancing debt incurred to replace existing machinery inventory (0 - not refinanced; 99 - every year) ..... [0]

Credit Terms used for new investment (1 - Credit Term 1, 2 - Credit Term 2, etc., or 5 - financed from equity)

Item:	A	B	C
Buildings	[1]	[0]	[0]
Equipment	[0]		
Livestock or Trees/Vines	[1]		
Land	[0]	[0]	[0]

Replacement of existing equipment (do not use 5) [1]

Section 8: Financial Feasibility Page 3

* Average annual amount that will be spent on replacement machinery in future years if the investment is not made	[25000]
Annual depreciation if the investment is not made	[23000]
If budget generator is not used:	
* Expected annual net cash flow if the investment is not made	[40000]
Annual amount of income that qualifies for capital gains treatment if investment is not made	[0]
Investment credit carryover:	
Federal	[0]
State	[1200]
Federal taxes paid during last three years that have not been offset by investment tax credit	[5000]
* Expected annual investment credit without expansion:	
Federal	[0]
State	[1000]
* Estimated annual cash living expenses including Social Security taxes but not income taxes	[30000]
* Expected annual nonfarm income	[0]

Section 9: Modification of Assumptions

Note: Include a decimal point with Assumption values, e.g., 4.0 when a value of four is needed.

	New Assumption value	Assumption Code
1.	[4.5]	[54]
2.	[ ]	[ ]
3.	[ ]	[ ]
4.	[ ]	[ ]
5.	[ ]	[ ]
6.	[ ]	[ ]
7.	[ ]	[ ]
8.	[ ]	[ ]
9.	[ ]	[ ]
10.	[ ]	[ ]
11.	[ ]	[ ]
12.	[ ]	[ ]
13.	[ ]	[ ]
14.	[ ]	[ ]
15.	[ ]	[ ]

*** CAPVEST v1.2 INPUT DATA ***

Problem analyzed for: Apple Grower
Title .....: 20 Acres of 4-wire Trellis

Section 1: PLANNING INFORMATION:

Planning Period	21
Cost of Capital	12.00
Federal Adjusted Gross Income	40000.
Federal Standard Deduction	5700.
Federal Personal Exemption	2150.
28% Federal tax rate begins at	34000.
Rate of inflation for Federal tax indexing	5.
Number of tax families	1.
Average number of tax exemptions per tax family	4.

Section 2: BUILDING INVESTMENT INFORMATION:

	Item A	Item B	Item C
Total Cost	24000.	0.	0.
Year of Purchase	2.	0.	0.
Recovery Class	10.	0.	0.
Recovery Option Code	4.	0.	0.
Rec. Opt. Cd on repl	9.	0.	0.
Qualify for Federal ITC	0.	0.	0.
Qualify for State ITC	1.	0.	0.
Years to replacement	0.	0.	0.
Salvage percent	0.	0.	0.

Section 4: TREE AND VINE INVESTMENT INFORMATION:

	Variety A	Variety B
Development costs expensed (=1) or capitalized (=0)	1.	0.
Income tax recovery option used	4.	0.
Skip preparation year (0=no; 1=yes)	0.	0.
Acres to be established: Yr. 2	20.	Yr. 2 0.
3	0.	3 0.
4	0.	4 0.
5	0.	5 0.
Land value per acre (if land is not part of investment	1000.	0.
Preparation cost per acre	641.	0.
Establishment cost per acre	3927.	0.
Development cost per acre: Yr. 1	423.	0.
2	812.	0.
3	0.	0.
4	0.	0.
5	0.	0.
Terminal value of trees and vines per acre	0.	0.

Section 6: PROJECTED INCREASE IN CASH FLOW:

	Amount	Years
1.	0.	3.
2.	-7900.	1.
3.	-520.	1.
4.	9380.	1.
5.	27880.	1.
6.	40740.	1.
7.	51110.	1.
8.	57680.	12.

Section 8: FINANCIAL FEASIBILTY INFORMATION: Page 1

Credit Terms:	1	2	3	4
Years to repay	7.	0.	0.	0.
Interest rate	11.00	.00	.00	.00
Even principal and interest (=0) or even principal (=1)	0.	0.	0.	0.
Number of payments per year	1.	0.	0.	0.

Current Debt Outstanding:	Loan A	Loan B	Loan C	Loan D	Loan E
Amount ($)	150000.	80000.	0.	0.	0.
Amount is loan payment (=0) or original principal (=1)	1.	1.	0.	0.	0.
Number of payments per year	1.	1.	0.	0.	0.
Years since loan was taken	6.0	1.0	.0	.0	.0
Original term of loan (yrs)	20.	7.	0.	0.	0.
Even principal $ interest (=0) or even principal (=1) payments	0.	0.	0.	0.	0.
Interest Rate	12.00	11.00	.00	.00	.00
Refinance loan (0 - no; 1 - yes)?	0.	0.	0.	0.	0.
Credit term used for refinancing (Credit term 1, 2, or 4)	0.	0.	0.	0.	0.

FINANCIAL FEASIBILITY INFORMATION: Page 2

Year	0	1	2	3	4	5
In what years will refinancing occur? (0 - no refinancing; 1 - refinancing)	0.	0.	0.	0.	0.	0.

Year of refinancing debt incurred to replace existing machinery inventory (0 - not refinanced; 99 - every year) 0.

Credit terms used for new investment
(1 - Credit Term 1, 2 - Credit Term 2, etc; or 5 - refinanced from equity

Group:	A	B	C
Buildings	1.	0.	0.
Equipment 0.			
Livestock or Trees/Vines 1.			
Land	0.	0.	0.

Replacement of existing equipment (do not use 5) 1.

FINANCIAL FEASIBILITY INFORMATION: Page 3

Average annual amount that will be spent on replacement machinery in future years if the investment is not made	25000.
Annual depreciation if the investment is not made	23000.
If budget generator is not used:	
Expected annual net cash flow if the investment is not made	40000.
Annual amount of income that qualifies for capital gains treatment if investment is not made	0.
Investment credit carryover:	
Federal	0.
State	1200.
Federal taxes paid during last three years that have not been offset by investment tax credit	5000.
Expected annual investment credit without expansion:	
Federal	0.
State	1000.
Estimated annual cash living expenses excluding taxes	30000.
Expected annual nonfarm income	0.

Section 9: MODIFICATION OF ASSUMPTIONS:

	New Assumption value	Assumption Code
1	4.5	54

*** END OF INPUT DATA ***

*** INVESTMENT ANALYSIS ***
NAME: Apple Grower
TITLE: 20 Acres of 4-wire Trellis
1. NET PRESENT VALUE OF INVESTMENT ($) IS: 198618.
2. PERCENT AFTER TAX COST OF CAPITAL IS: 8.6
3. CASH FLOW:

YEAR	BEFORE TAX CASH FLOW	DEPRE-CIATION	TAXABLE INCOME	TAX	AFTER TAX CASH FLOW	PRESENT VALUE
1	-13397.	0.	-13397.	-2746.	-10651.	-9807.
2	-9239.	0.	-9239.	-1919.	-7319.	-6206.
3	-18533.	655.	-19188.	-3988.	-14544.	-11355.
4	-9421.	3455.	-12876.	-2725.	-6696.	-4814.
5	-648.	5599.	-6247.	-1374.	726.	481.
6	12215.	5599.	6616.	1456.	10760.	6559.
7	37941.	5599.	32342.	9851.	28089.	15766.
8	57936.	5599.	52338.	16784.	41153.	21270.
9	75954.	5599.	70356.	22976.	52978.	25213.
10	89575.	5599.	83976.	27459.	62117.	27221.
11	93606.	5599.	88007.	28772.	64834.	26162.
12	97818.	5599.	92220.	30144.	67674.	25146.
13	102220.	5599.	96621.	31578.	70642.	24170.
14	106820.	5599.	101221.	33076.	73744.	23233.
15	111627.	5599.	106028.	34642.	76985.	22334.
16	116650.	5599.	111052.	36279.	80371.	21470.
17	121900.	5599.	116301.	37989.	83911.	20640.
18	127385.	5599.	121786.	39776.	87609.	19843.
19	133117.	5599.	127519.	41643.	91474.	19078.
20	139108.	5599.	133509.	43595.	95513.	18343.
21	145368.	5599.	139769.	45634.	99733.	17637.
TOTAL						302383.

4. INVESTMENTS (OUTLAY):

YEAR	BUILDINGS	EQUIPMENT	ORCHARD - VINEYARD TREES-VINES	LAND	LAND	TOTAL	PRESENT VALUE
0	0.	0.	0.	20000.	0.	20000.	20000.
2	26209.	0.	85768.	0.	0.	111976.	94944.
					TOTAL		114944.
TERMINAL VALUE:							
BEFORE TAX	0.	0.	0.	50405.	0.	50405.	8913.
AFTER TAX	0.	0.	3141.	41496.	0.	44637.	7894.

5. INVESTMENT TAX CREDIT:

YEAR	CREDIT	RECAPTURE	NET
3	1048.	0.	1048.
4	3431.	0.	3431.

PRESENT VALUE OF NET INVESTMENT TAX CREDIT IS: 3285.

6. BUDGET:

ITEM	YEAR 1	2	3	4	5
EXPENSED PREPARATION & DEVELOPMENT COSTS	13397.	9239.	18533.	0.	0.
INPUT CASH FLOW	0.	0.	0.	-9421.	-648.
INCREASE IN CASH FLOW	-13397.	-9239.	-18533.	-9421.	-648.

7. FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	28403.	34442.	27114.	38280.	49199.
TAXES PAID	0.	0.	0.	0.	0.
AFTER-TAX CASH FLOW	28403.	34442.	27114.	38280.	49199.
LIVING EXPENSES	31350.	32761.	34235.	35776.	37385.
CASH AVAILABLE FOR DEBT	-2947.	1682.	-7121.	2504.	11814.
DEBT PAYMENTS: SCHEDULED	41303.	41303.	65066.	65066.	65066.
INCL. MACH. REPLACEMENT	41303.	46847.	76404.	82458.	88785.
EXCESS OR DEFICIT	-44250.	-45166.	-83525.	-79954.	-76971.

DEBT SUMMARY (SCHEDULED):

	0	YEAR 1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	91823.	80702.	180334.	155186.	127272.	96287.
LONG TERM LOANS	133106.	128997.	124394.	119240.	113467.	107001.
MACHINERY REP.		26125.	50755.	73529.	94037.	111817.
TOTAL	224928.	235823.	355483.	347955.	334776.	315105.
DEBT PAYMENTS:						
INTERMEDIATE		21222.	21222.	44985.	44985.	44985.
LONG TERM LOANS		20082.	20082.	20082.	20082.	20082.
MACHINERY REP.		0.	5544.	11338.	17392.	23718.
FINANCING FROM EQUITY	0.	0.	0.	0.	0.	0.

* * * *

*** END OF ANALYSIS ***

Section 1: Investment Planning Information

Problem analyzed for: [Apple Grower]
Title ·····[20 Acres of 4-wire Trellis: Analysis 2]

Planning Period (years)	[21]
* Cost of Capital (e.g., 12.0 for 12%, decimal point required)	[12.00]
Federal Adjusted Gross Income without investment	[40000]
* Federal Standard Deduction	[5700]
* Federal Personal Exemption	[2150]
* 28% Federal Tax rate begins at	[34000]
* Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)	[4.50]
Number of tax families	[1]
Average number of tax exemptions per tax family	[4]
* Modify State income tax brackets (Y/y)?	[Y]

Include: 1) Livestock Investment Information (Y/y) [ ]
2) Tree/Vine Investment Information (Y/y) [y]
3) Financial Feasibility Information (Y/y) [Y]
(Note: If Items 1, 2, and 3 are blank they are excluded from the analysis.)

Section 6: Projected Increase in Cash Flow

	Amount	Years
1.	[0]	*[3]
2.	[-8790]	[1]
3.	[-2281]	[1]
4.	[6729]	[1]
5.	[23468]	[1]
6.	[35229]	[1]
7.	[44476]	[1]
8.	[50389]	[12]
9.	[ ]	[ ]
10.	[ ]	[ ]

Note:

1. Enter increase in cash flow before income taxes (projected increase in cash receipts minus increase in cash expenses; do not include increased sales of calves and cull cows nor the cost of added purchased replacements).

*** INVESTMENT ANALYSIS ***

NAME: Apple Grower

TITLE: 20 Acres of 4-wire Trellis: Analysis 2

1. NET PRESENT VALUE OF INVESTMENT ($) IS: 155839.

2. PERCENT AFTER TAX COST OF CAPITAL IS: 8.6

3. CASH FLOW:

YEAR	BEFORE TAX CASH FLOW	DEPRE-CIATION	TAXABLE INCOME	TAX	AFTER TAX CASH FLOW	PRESENT VALUE
1	-13397.	0.	-13397.	-2746.	-10651.	-9807.
2	-9239.	0.	-9239.	-1919.	-7319.	-6206.
3	-18533.	1966.	-20498.	-4257.	-14276.	-11146.
4	-10482.	5782.	-16264.	-3420.	-7063.	-5077.
5	-2843.	7378.	-10221.	-2213.	-630.	-417.
6	8763.	6914.	1848.	407.	8356.	5094.
7	31937.	6579.	25358.	7407.	24530.	13769.
8	50099.	6579.	43520.	13698.	36402.	18814.
9	66096.	6579.	59517.	19227.	46868.	22305.
10	78253.	6579.	71674.	23394.	54859.	24041.
11	81774.	6579.	75195.	24539.	57235.	23096.
12	85454.	6579.	78875.	25735.	59719.	22190.
13	89299.	5434.	83865.	27363.	61936.	21191.
14	93318.	4288.	89029.	29048.	64269.	20248.
15	97517.	4288.	93229.	30413.	67104.	19467.
16	101905.	4288.	97617.	31840.	70065.	18717.
17	106491.	4288.	102203.	33331.	73160.	17996.
18	111283.	4288.	106995.	34889.	76394.	17303.
19	116291.	4288.	112002.	36517.	79774.	16638.
20	121524.	4288.	117235.	38218.	83306.	15998.
21	126992.	4288.	122704.	39996.	86997.	15384.
TOTAL						259597.

4. INVESTMENTS (OUTLAY):

YEAR	BUILDINGS	EQUIPMENT	ORCHARD - VINEYARD TREES-VINES	LAND	LAND	TOTAL	PRESENT VALUE
0	0.	0.	0.	20000.	0.	20000.	20000.
2	26209.	0.	85768.	0.	0.	111976.	94944.
					TOTAL		114944.
TERMINAL VALUE:							
BEFORE TAX	0.	0.	0.	50405.	0.	50405.	8913.
AFTER TAX	0.	0.	3120.	41557.	0.	44677.	7901.

5. INVESTMENT TAX CREDIT:

YEAR	CREDIT	RECAPTURE	NET
3	1048.	0.	1048.
4	3431.	0.	3431.

PRESENT VALUE OF NET INVESTMENT TAX CREDIT IS: 3285.

6. BUDGET:

ITEM	YEAR 1	2	3	4	5
EXPENSED PREPARATION & DEVELOPMENT COSTS	13397.	9239.	18533.	0.	0.
INPUT CASH FLOW	0.	0.	0.	-10482.	-2843.
INCREASE IN CASH FLOW	-13397.	-9239.	-18533.	-10482.	-2843.

7. FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	28403.	34442.	27114.	37219.	47005.
TAXES PAID	0.	0.	0.	0.	0.
AFTER-TAX CASH FLOW	28403.	34442.	27114.	37219.	47005.
LIVING EXPENSES	31350.	32761.	34235.	35776.	37385.
CASH AVAILABLE FOR DEBT	-2947.	1682.	-7121.	1443.	9619.
DEBT PAYMENTS: SCHEDULED	52242.	52242.	76005.	76005.	76005.
INCL. MACH. REPLACEMENT	52242.	57786.	87342.	93397.	99723.
EXCESS OR DEFICIT	-55188.	-56104.	-94463.	-91954.	-90104.

DEBT SUMMARY (SCHEDULED):

	YEAR 0	1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	109778.	96388.	193501.	165558.	134540.	100111.
LONG TERM LOANS	194115.	190633.	186734.	182366.	177474.	171995.
MACHINERY REP.		26125.	50755.	73529.	94037.	111817.
TOTAL	303894.	313147.	430990.	421453.	406052.	383923.
DEBT PAYMENTS:						
INTERMEDIATE		25466.	25466.	49229.	49229.	49229.
LONG TERM LOANS		26776.	26776.	26776.	26776.	26776.
MACHINERY REP.		0.	5544.	11338.	17392.	23718.
* * * *						
FINANCING FROM EQUITY	0.	0.	0.	0.	0.	0.

*** END OF ANALYSIS ***

Section 1: Investment Planning Information

Problem analyzed for: [Apple Grower]
Title ·····[20 Acres of 4-wire Trellis: Analysis 3]

Planning Period (years)	[21]
* Cost of Capital (e.g., 12.0 for 12%, decimal point required)	[15.00]
Federal Adjusted Gross Income without investment	[40000]
* Federal Standard Deduction	[5700]
* Federal Personal Exemption	[2150]
* 28% Federal Tax rate begins at	[34000]
* Rate of inflation for indexing Federal tax (e.g. 4.0 for 4%)	[4.50]
Number of tax families	[1]
Average number of tax exemptions per tax family	[4]
* Modify State income tax brackets (Y/y)?	[Y]

Include: 1) Livestock Investment Information (Y/y) [ ]
2) Tree/Vine Investment Information (Y/y) [y]
3) Financial Feasibility Information (Y/y) [Y]
(Note: If Items 1, 2, and 3 are blank they are excluded from the analysis.)

Section 6: Projected Increase in Cash Flow

	Amount	Years
1.	[0]	*[3]
2.	[-8790]	[1]
3.	[-2281]	[1]
4.	[6729]	[1]
5.	[23468]	[1]
6.	[35229]	[1]
7.	[44476]	[1]
8.	[50389]	[12]
9.	[ ]	[ ]
10.	[ ]	[ ]

Note:

1. Enter increase in cash flow before income taxes (projected increase in cash receipts minus increase in cash expenses; do not include increased sales of calves and cull cows nor the cost of added purchased replacements).

*** INVESTMENT ANALYSIS ***

NAME: Apple Grower

TITLE: 20 Acres of 4-wire Trellis: Analysis 3

1. NET PRESENT VALUE OF INVESTMENT ($) IS: 89295.

2. PERCENT AFTER TAX COST OF CAPITAL IS: 10.8

3. CASH FLOW:

YEAR	BEFORE TAX CASH FLOW	DEPRE-CIATION	TAXABLE INCOME	TAX	AFTER TAX CASH FLOW	PRESENT VALUE
1	-13397.	0.	-13397.	-2746.	-10651.	-9612.
2	-9239.	0.	-9239.	-1919.	-7319.	-5962.
3	-18533.	1966.	-20498.	-4257.	-14276.	-10495.
4	-10482.	5782.	-16264.	-3420.	-7063.	-4686.
5	-2843.	7378.	-10221.	-2213.	-630.	-377.
6	8763.	6914.	1848.	407.	8356.	4516.
7	31937.	6579.	25358.	7407.	24530.	11965.
8	50099.	6579.	43520.	13698.	36402.	16025.
9	66096.	6579.	59517.	19227.	46868.	18622.
10	78253.	6579.	71674.	23394.	54859.	19672.
11	81774.	6579.	75195.	24539.	57235.	18524.
12	85454.	6579.	78875.	25735.	59719.	17444.
13	89299.	5434.	83865.	27363.	61936.	16328.
14	93318.	4288.	89029.	29048.	64269.	15291.
15	97517.	4288.	93229.	30413.	67104.	14410.
16	101905.	4288.	97617.	31840.	70065.	13579.
17	106491.	4288.	102203.	33331.	73160.	12797.
18	111283.	4288.	106995.	34889.	76394.	12060.
19	116291.	4288.	112002.	36517.	79774.	11366.
20	121524.	4288.	117235.	38218.	83306.	10712.
21	126992.	4288.	122704.	39996.	86997.	10096.
TOTAL						192274.

4. INVESTMENTS (OUTLAY):

YEAR	BUILDINGS	EQUIPMENT	ORCHARD - VINEYARD TREES-VINES	LAND	LAND	TOTAL	PRESENT VALUE
0	0.	0.	0.	20000.	0.	20000.	20000.
2	26209.	0.	85768.	0.	0.	111976.	91211.
					TOTAL		111211.
TERMINAL VALUE:							
BEFORE TAX	0.	0.	0.	50405.	0.	50405.	5850.
AFTER TAX	0.	0.	3120.	41557.	0.	44677.	5185.

5. INVESTMENT TAX CREDIT:

YEAR	CREDIT	RECAPTURE	NET
3	1048.	0.	1048.
4	3431.	0.	3431.

PRESENT VALUE OF NET INVESTMENT TAX CREDIT IS: 3047.

6. BUDGET:

ITEM	YEAR 1	2	3	4	5
EXPENSED PREPARATION & DEVELOPMENT COSTS	13397.	9239.	18533.	0.	0.
INPUT CASH FLOW	0.	0.	0.	-10482.	-2843.
INCREASE IN CASH FLOW	-13397.	-9239.	-18533.	-10482.	-2843.

7. FINANCIAL FEASIBILITY ANALYSIS: COMPLETE FARM BUSINESS.

ITEM	YEAR 1	2	3	4	5
BEFORE-TAX CASH FLOW	28403.	34442.	27114.	37219.	47005.
TAXES PAID	0.	0.	0.	0.	0.
AFTER-TAX CASH FLOW	28403.	34442.	27114.	37219.	47005.
LIVING EXPENSES	31350.	32761.	34235.	35776.	37385.
CASH AVAILABLE FOR DEBT	-2947.	1682.	-7121.	1443.	9619.
DEBT PAYMENTS: SCHEDULED	52242.	52242.	76005.	76005.	76005.
INCL. MACH. REPLACEMENT	52242.	57786.	87342.	93397.	99723.
EXCESS OR DEFICIT	-55188.	-56104.	-94463.	-91954.	-90104.

DEBT SUMMARY (SCHEDULED):

	YEAR 0	1	2	3	4	5
OUTSTANDING DEBT:						
INTERMEDIATE	109778.	96388.	193501.	165558.	134540.	100111.
LONG TERM LOANS	194115.	190633.	186734.	182366.	177474.	171995.
MACHINERY REP.		26125.	50755.	73529.	94037.	111817.
TOTAL	303894.	313147.	430990.	421453.	406052.	383923.
DEBT PAYMENTS:						
INTERMEDIATE		25466.	25466.	49229.	49229.	49229.
LONG TERM LOANS		26776.	26776.	26776.	26776.	26776.
MACHINERY REP.		0.	5544.	11338.	17392.	23718.
* * * *						
FINANCING FROM EQUITY	0.	0.	0.	0.	0.	0.

*** END OF ANALYSIS ***

Other Agricultural Economics Extension Publications

No. 90-27	Farm Income Tax Management and Reporting	George L. Casler Stuart F. Smith
No. 90-28	Pro-Dairy Financial Data Collection Workbook	Jonas B. Kauffman Stuart F. Smith
No. 90-29	Changes in the New York State Farm Minimum Wage Law	Thomas R. Maloney Kay Embrey
No. 90-30	New York Economic Handbook 1991 Agricultural Situation and Outlook	Extension Staff
No. 91-1	Estimating Principal Due in Next 12 Months with Monthly Payments	Eddy L. LaDue
No. 91-2	Micro DFBS A Guide to Processing Dairy Farm Business Summaries in County and Regional Extension Offices for Micro DFBS v 2.5	Linda D. Putnam Wayne A. Knoblauch Stuart F. Smith
No. 91-3	The National Dry Onion Market: A Monthly Analysis of New York State's Competitive Position in Eastern Markets	Enrique Figueroa
No. 91-4	Property Tax Relief from New York's Farmland Assessments and Agricultural Buildings Exemptions in the 1980's	Richard N. Boisvert Nelson L. Bills
No. 91-5	Dairy Farm Cash Flow, Debt Repayment Ability and Financial Analysis	George L. Casler
No. 91-6	Agricultural District Legislation in New York, as Amended through 1990	Kenneth Gardner Nelson Bills