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Idaho Enterprise Budget Generator

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Rapidly rising production costs and changing crop and livestock price levels make estimating the profitability of alternative farm enterprises difficult. Production technology differences between major production areas and regions within Idaho further complicate this estimation task. Finally, the problem is magnified by changing economic conditions, requiring yearly adjustment of prices.

Up-to-date information on crop enterprise budgets for most parts of Idaho is now available from the Department of Agricultural Economics and Applied Statistics at the University of Idaho and from county offices of the University of Idaho Cooperative Extension Service. Similar budgets for livestock enterprises will be available in mid-1981.

Enterprise budgets permit economic evaluation of alternative production systems and management practices. You can compare alternative systems and practices by closely studying all the variable and fixed inputs. Enterprise budgeting provides a straightforward method of systematically considering cost changes at each stage of a complex production process.

Data Source

Data for the enterprise budgets were collected from interviews with more than 650 farmers. These individuals represented most of Idaho's major agricultural areas. Prices are adjusted periodically to reflect changes in production costs.

Using the Idaho Budget Generator

The Idaho Budget Generator provides a basis for comparing profitability of individual enterprises in your farm business with enterprises in other farm businesses. The generator points out supply needs such as labor, fertilizer, herbicides, credit and machinery as well as your cash flow needs.

Each budget consists of two summary pages and two detailed information pages. The first summary page is divided into: (1) production, (2) operating inputs, (3) capital cost, (4) ownership cost, (5) labor cost, (6) land charge or rent and (7) overhead and management charges. The same information is presented in the second summary page but divided into: (1) gross receipts, (2) variable costs (preharvest and harvest), (3) income above variable costs, (4) fixed costs, (5) management, (6) total costs and (7) returns to risk. Break-even prices are also presented on the second summary page. Tables are from sample printouts for irrigated wheat in Twin Falls County.

Table 1 — First Summary Page

1. Production Category shows the assumed production per acre, the price per unit and the total production value per acre. In the case of irrigated spring wheat:

$4.00 per bushel × 75 bushels per acre = $300.00 per acre

2. Operating Inputs Category includes all production inputs, which vary with the quantity of crop produced. The quantity needed times the cost per unit for each supply item is listed for each input. The costs for each item are added to determine the total operating cost per acre. In the spring wheat example, the total is $101.71 per acre. The return to land, labor, capital, machinery, overhead, risk and management is the difference between gross revenue and total operating cost.

3. Capital Costs Category is divided into operating capital,

tractor investment, equipment investment and irrigation investment. Operating capital is computed on the basis of the time each input is used in the production season. The computer program currently charges an interest rate of 12 percent from the time the inputs are applied to the end of the production season. The tractor and equipment investment capital cost is based on the average investment with an interest charge of 12 percent. In our example, the total interest charge is $30.96 per acre.

4. Ownership Costs Category includes such costs as depreciation, taxes and insurance on tractors, equipment and irrigation system. For the spring wheat example, the cost is $23.41 per acre.

5. Labor Costs Category shows machinery costs estimated by taking actual hours for a specific machine and multiplying by 1.1 for a tractor and implements and 1.2 for self-propelled implements. These coefficients (1.1 and 1.2) indicate labor in excess of machine time to allow for adjustment, lubrication and maintenance of equipment. Irrigation labor is based on the number of hours per irrigation for the specific irrigation system used. This value times the number of irrigations gives the total irrigation labor requirements. These labor requirements are then multiplied by the appropriate cost to give the machinery labor and irrigation labor costs shown in the table. For the spring wheat example, labor costs are $17.17 per acre.

6. The Land Charge Category includes land investment times an interest rate. The interest rate is an opportunity cost for the value of the land. Tax cost is then added to calculate the total land charge. For the spring wheat example, the land charge will be $125.70 per acre. The land charge can also be expressed as rent paid for land. The rent will substitute for the total land charge.

7. Overhead and Management Charges Category includes the overhead charge, which is 3 percent of the combined operating, capital and labor costs. The overhead charge is for costs which cannot be allocated to a specific enterprise. The management charge — payment to the operator for his decision making — is 5 percent of the total receipts for the enterprise. The total charge for the overhead and management category is $19.50 for our spring wheat example.

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Table 1. Twin Falls County large farm growing spring wheat.

Category	Units	Price	Quantity	Value	Your Value
1. Production					
Spring wheat	bu	4.00	75.000	300.00	
Total receipts				300.00	
2. Operating inputs					
Wheat seed	lb	0.10	100.000	10.00	
Nitrogen	lb	0.25	70.000	17.50	
Phosphate	lb	0.25	50.000	12.50	
Apply fertilizer	acre	3.75	1.000	3.75	
2,4-D	qt	2.65	2.000	5.30	
Water assessment	acre	7.00	1.000	7.00	
Custom combine	acre	21.00	1.000	21.00	
Tractor fuel cost	acre			4.33	
Tractor repair cost	acre			1.39	
Tractor lube cost	acre			0.65	
Equipment fuel cost	acre			10.46	
Equipment lube cost	acre			1.57	
Equipment repair cost	acre			5.13	
Irrigation repair cost	acre			1.12	
Total operating cost				101.71	
Returns to land, labor, capital, machinery, overhead, risk and management				198.29	
3. Capital costs					
Annual operating capital		0.12	30.351	3.64	
Tractor investment		0.12	34.932	4.19	
Equipment investment		0.12	99.708	11.96	
Irrigation system investment		0.12	93.000	11.16	
Total interest charge				30.96	
Returns to land, labor, machinery, overhead, risk and management				167.33	
4. Ownership costs (depreciation, taxes, insurance)					
Tractor	$			3.70	
Equipment	$			13.44	
Irrigation system	$			6.28	
Total ownership cost				23.41	
Returns to land, labor, overhead, risk and management				143.92	
5. Labor costs					
Machinery labor	hr	4.25	2.629	11.17	
Irrigation labor	hr	3.75	1.600	6.00	
Total labor cost				17.17	
Returns to land, overhead, risk and management				126.74	
6. Land charge or rent					
Land investment	acre	0.08	1500.000	120.00	
Land taxes	acre			5.70	
Total land charge				125.70	
Returns to overhead, risk and management				1.04	
7. Overhead and management charges					
Overhead	$	0.03	149.840	4.50	
Management	$	0.05	300.000	15.00	
Total overhead and management charge				19.50	
Return to risk				-18.45	

Table 2 — Second Summary Page

1. The Gross Receipts Category is the same as No. 1 in Table 1 (First Summary Page).

2. The Variable Costs Category divides preharvest and harvest costs. These correspond to operating input, labor and operating capital costs in the first summary page (Table 1). In our spring wheat example, preharvest costs are $90.66 while harvest costs are $31.87. Total variable costs are $122.53.

3. The Income Above Variable Costs Category shows what is left after out-of-pocket cash costs are paid. In this example, $177.47 will be available to pay for machinery, land, taxes, overhead, etc.

4. The Fixed Costs Category includes depreciation of machinery, tractors and irrigation equipment, taxes, land investment and overhead.

5. The Management Category calculates the management charge in the same way for both summary pages (Tables 1 and 2). This charge is separated on this summary page (Table 2).

6. The Total Costs Category combines the costs of all previous items.

7. The Net Returns to Risk Category shows what is left after all resources have been allocated a return on investment. In this example, the net return to risk is $-18.45.

8. The Break-even Prices Category shows what is required to cover (1) variable input costs, (2) variable input, interest and labor costs and (3) all costs except risk. In the spring wheat example, the break-even price to cover variable inputs, interest and labor is $2.00 per bushel.

Table 2. Twin Falls County large farm growing spring wheat.

Category	Unit	Price or cost/unit	Quantity	Value or cost
1. Gross receipts from production				
Spring wheat	bu	4.00	75.00	$300.00
Total				$300.00
2. Variable costs				
Preharvest				
Wheat seed	lb	0.10	100.00	$ 10.00
Nitrogen	lb	0.25	70.00	17.50
Phosphate	lb	0.25	50.00	12.50
Apply fertilizer	acre	3.75	1.00	3.75
2,4-D	qt	2.65	2.00	5.30
Water assessment	acre	7.00	1.00	7.00
Machinery	acre	9.26	1.00	9.26
Tractors	acre	6.38	1.00	6.38
Irrigation machinery	acre	1.12	1.00	1.12
Labor (tractor and machinery)	hour	4.25	1.93	8.21
Labor (irrigation)	hour	3.75	1.60	6.00
Interest on operating capital	$	0.12	30.35	3.64
Subtotal, pre-harvest				$ 90.66
Harvest costs				
Custom combine	acre	21.00	1.00	$ 21.00
Machinery	acre	7.91	1.00	7.91
Labor (tractor and machinery)	hour	4.25	0.70	2.96
Subtotal, harvest				$ 31.87
Total variable cost				$122.53
3. Income above variable costs				$177.47
4. Fixed Costs				
Machinery	acre	25.40	1.00	$ 25.40
Tractors	acre	7.89	1.00	7.89
Irrigation machinery	acre	17.44	1.00	17.44
Taxes (land, water)	acre	5.70	1.00	5.70
Return on land investment	acre	0.08	1500.00	120.00
Overhead	acre	4.50	1.00	4.50
Total fixed costs				$180.92
5. Management	$	0.05	300.00	$ 15.00
6. Total costs				$318.45
7. Net returns to risk				$-18.45
Irrigated-surface				
8. Break-even prices				
If 75.00 bu spring wheat are produced:				
To cover variable inputs		1.356		
To cover variable inputs interest and labor		1.998		
To cover all costs except risk		4.246		

Tables 3, 4 — Detailed Information Pages

The detailed information pages contain the information on which the two summary pages (Tables 1 and 2) are based. Table 3 is divided into: (1) production, (2) operating inputs, (3) machinery requirements, (4) number of irrigations and (5) fuel allocated. Table 4 is divided into: (6) production, (7) annual capital, (8) labor requirements, (9) irrigation water and (10) machinery fixed and variable costs per hour.

1. The Production Category shows what month the year's production is harvested. The production revenue and gross receipts — 1 on both summary pages — were computed from this information. Columns 14 through 18 identify specific items the computer program used to calculate the budget.

2. The Operating Inputs Category gives special information showing when the year's operating inputs are applied. The annual operating costs and

variable costs are computed from this distribution. For the spring wheat example, fertilizer is applied in April.

3. The Machinery Requirements Category lists information based on how many times each type of machine is used on an acre. However, for pickups and trucks, the figures are based on hours per acre. The costs for implements include the cost for the power unit to pull it.

4. The Number of Irrigations Category gives the number of irrigations for each crop along with the month of occurrence.

5. The Fuel Allocated Category gives the fuel use for the various operations and power unit in which the fuel was used.

6. The Summary Returns and Expenses Category shows the monthly returns and expenses for the enterprise. Total returns of $300.00 and total yearly expenses of $101.71 are shown in the right hand column. Returns to land, labor, capital, machinery, overhead, risk and management are shown in the lower right corner. In this example, it is $198.29. This table also shows when production is harvested and sold. In this example, wheat is sold in September. The table shows which months the operating inputs are applied and the per acre cost of the item or operation. In this example, 70 pounds per acre of nitrogen fertilizer is applied in April. The fertilizer cost is $0.25 per pound. The total nitrogen fertilizer cost is $17.50.

7. The Annual Capital Category contains annualized monthly and total annual capital estimates. (Annualized means adjustments to a yearly basis.)

8. The Labor Requirements Category shows the monthly labor requirements to raise the crop. Total hours are given by month and for the year.

9. The Irrigation Category gives the inches of irrigation water applied each month and the total gross irrigation water applied. In our example, 40 acre inches are applied by surface method. The normal efficiency is estimated to be 45 percent for surface application, 65 percent for sprinkler application and 75 percent for center pivot application.

Table 3. Twin Falls County large farm growing spring wheat.

	1 Jan	2 Feb	3 Mar	4 Apr	5 May	6 Jun	7 Jul	8 Aug	9 Sep	10 Oct	11 Nov	12 Dec	13 Price	14 Weight	15 Unit	16 Item	17 Type	18 Cont
1. Production									Number of Units									
Spring wheat	0	0	0	0	0	0	0	0	75	0	0	0	4.00	0	12	70	2	0
2. Operating inputs					Rate/unit								Price	Number units	Unit code	Item code	Type	Cont
11 Wheat seed	0	0	0.0	100.0	0.0	0	0	0	0.0	0	0	0	0.10	0.0	9	170	3	0
12 Nitrogen	0	0	0.0	70.0	0.0	0	0	0	0.0	0	0	0	0.25	0.0	9	211	3	0
13 Phosphate	0	0	0.0	50.0	0.0	0	0	0	0.0	0	0	0	0.25	0.0	9	214	3	0
14 Apply fertilizer	0	0	0.0	1.0	0.0	0	0	0	0.0	0	0	0	3.75	0.0	13	311	3	0
15 2,4-D	0	0	0.0	0.0	2.0	0	0	0	0.0	0	0	0	2.65	0.0	6	251	3	0
16 Water assessment	0	0	1.0	0.0	0.0	0	0	0	0.0	0	0	0	7.00	0.0	13	436	3	0
18 Custom combine	0	0	0.0	0.0	0.0	0	0	0	1.0	0	0	0	21.00	0.0	13	305	3	9
3. Machinery requirements					Times over										Power unit	Mach code	Type	Cont
38 Tandem disk	0	0	1.0	0.00	0.0	0	0	0	0.00	0	0	0	0.0	0.0	7	36	4	0
39 Roller harrow	0	0	0.0	1.00	0.0	0	0	0	0.00	0	0	0	0.0	0.0	7	45	4	0
40 Drill	0	0	0.0	1.00	0.0	0	0	0	0.00	0	0	0	0.0	0.0	4	50	4	0
41 Corrugator	0	0	0.0	1.00	0.0	0	0	0	0.00	0	0	0	0.0	0.0	2	58	4	0
43 Truck	0	0	0.0	0.28	0.0	0	0	0	0.00	0	0	0	0.0	0.0	0	10	4	0
44 Truck	0	0	0.0	0.00	0.0	0	0	0	0.28	0	0	0	0.0	0.0	0	10	4	9
45 Pickup	0	0	0.0	0.30	0.0	0	0	0	0.00	0	0	0	0.0	0.0	0	11	4	0
46 Pickup	0	0	0.0	0.00	0.0	0	0	0	0.30	0	0	0	0.0	0.0	0	11	4	9
47 Sprayer	0	0	0.0	0.00	1.0	0	0	0	0.00	0	0	0	0.0	0.0	2	46	4	0
4. Number of irrigations	0	0	0	0	1	1	2	0	0	0	0	0						

5. Fuel allocated to operations in gallons per acre covered

Machine	Gallons	Power unit
Tandem disk	0.972	Tractor (90D)
Roller harrow	1.134	Tractor (90D)
Drill	0.838	Tractor (45D)
Corrugator	0.640	Tractor (35G)
Sprayer	0.473	Tractor (35G)

Fuel used in gallons per hour	
Tractor (35G)	2.625
Tractor (45D)	2.700
Tractor (90D)	5.400
Truck	9.590
Pickup	5.000

Table 4. Twin Falls County large farm growing spring wheat.

Category	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Price	Total	Value
6. Production																
Spring wheat	bu	0	0	0	0	0	0	0	0	75	0	0	0	4.00	75.00	300.00
Total receipts	acre	0	0	0	0	0	0	0	0	300	0	0	0			300.00
Operating inputs																
Wheat seed	lb	0	0	0.00	100.00	0.00	0.00	0.00	0	0.00	0	0	0	0.10	100.00	10.00
Nitrogen	lb	0	0	0.00	70.00	0.00	0.00	0.00	0	0.00	0	0	0	0.25	70.00	17.50
Phosphate	lb	0	0	0.00	50.00	0.00	0.00	0.00	0	0.00	0	0	0	0.25	50.00	12.50
Apply fertilizer	acre	0	0	0.00	1.00	0.00	0.00	0.00	0	0.00	0	0	0	3.75	1.00	3.75
2,4-D	qt	0	0	0.00	0.00	2.00	0.00	0.00	0	0.00	0	0	0	2.65	2.00	5.30
Water assessment	acre	0	0	1.00	0.00	0.00	0.00	0.00	0	0.00	0	0	0	7.00	1.00	7.00
Custom combine	acre	0	0	0.00	0.00	0.00	0.00	0.00	0	1.00	0	0	0	21.00	1.00	21.00
Tractor fuel cost	acre	0	0	0.97	2.77	0.59	0.00	0.00	0	0.00	0	0	0			4.33
Tractor repair cost	acre	0	0	0.43	0.87	0.09	0.00	0.00	0	0.00	0	0	0			1.39
Tractor lube cost	acre	0	0	0.15	0.42	0.09	0.00	0.00	0	0.00	0	0	0			0.65
Equipment fuel cost	acre	0	0	0.00	5.23	0.00	0.00	0.00	0	5.23	0	0	0			10.46
Equipment lube cost	acre	0	0	0.00	0.78	0.00	0.00	0.00	0	0.78	0	0	0			1.57
Equipment repair cost	acre	0	0	0.27	2.93	0.03	0.00	0.00	0	1.89	0	0	0			5.13
Irrigation repair cost	acre	0	0	0.00	0.00	0.28	0.28	0.56	0	0.00	0	0	0			1.12
Total cost	acre	0	0	8.82	56.76	6.39	0.28	0.56	0	7.91	0	0	0			101.71
Returns to land, labor, capital, machinery, overhead, risk and management																198.29
7. Annual capital	$	0	0	4.41	23.65	2.13	0.07	0.09	0	0.00	0	0	0		30.35	
8. Labor requirements by month																
Machinery labor	hr	0	0	0.20	1.54	0.20	0.00	0.00	0	0.70	0	0	0		2.63	
Irrigation labor	hr	0	0	0.00	0.00	0.40	0.40	0.80	0	0.00	0	0	0		1.60	
Total labor	hr	0	0	0.20	1.54	0.60	0.40	0.80	0	0.70	0	0	0		4.23	
9. Irrigation water	inch	0	0	0.00	0.00	10.00	10.00	20.00	0	0.00	0	0	0		40.00	

10. Machinery fixed and variable costs per hour

Machine	Code	Depr	Insurance	Tax	Interest	Total fixed	Repair	Fuel	Lubrication	Total variable	Total cost	hr/time
Tractor (35G)	2	2.10	0.15	0.32	2.91	5.48	0.52	3.28	0.49	4.30	9.77	1.00
Tractor (45D)	4	1.70	0.12	0.26	2.35	4.43	0.78	2.70	0.40	3.88	8.31	1.00
Tractor (90D)	7	4.13	0.29	0.63	5.71	10.76	2.38	5.40	0.81	8.59	19.34	1.00
Truck	10	7.22	0.36	0.83	7.20	15.61	5.19	11.99	1.80	18.98	34.59	1.00
Pickup	11	2.90	0.14	0.30	2.70	6.03	1.47	6.25	0.94	8.65	14.68	1.00
Tandem disk	36	6.06	0.34	0.82	6.85	14.07	1.68	0.00	0.00	1.68	15.74	0.16
Roller harrow	45	3.82	0.19	0.44	3.81	8.26	2.53	0.00	0.00	2.53	10.79	0.19
Drill	50	10.63	0.60	1.44	12.03	24.70	1.88	0.00	0.00	1.88	26.59	0.28
Corrugator	58	2.95	0.17	0.40	3.34	6.86	0.12	0.00	0.00	0.12	6.98	0.22
Sprayer	46	1.77	0.10	0.24	2.00	4.11	0.20	0.00	0.00	0.20	4.32	0.16

10. The Machine Cost Per Hour Category gives the fixed and variable machine cost per hour for each machine used. Fixed costs do not vary with the level of machine use; variable costs increase and decrease with changes in the level of machine use. Interest cost per hour is included in total fixed costs. Total cost per hour is the total fixed cost plus the total variable cost.

Available Publications

The Idaho Enterprise Budget Generator computer program has region-specific enterprise budgets for most Idaho crops. You can buy the publications listed from county offices of the University of Idaho Cooperative Extension Service or from the University of Idaho, Agricultural Information Office, Moscow, Idaho 83843. Make your check or money order payable to the University of Idaho. Give the publication number and title and include your name and mailing address.

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Idaho Livestock Enterprise Budgets (available summer 1981)

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