

Keep in mind that a budget should be used only as a guideline (or starting point). No budget template will represent any individual farm very well because of soil, climate, and market differences. The same process would occur if you were a producer in Washington looking at growing processing tomatoes. First you must determine the scale and production system, find the closest geographic budgets, and then adapt them to your specific location.

While complexity varies among budgets, most budgets have common components. The first component is crop inputs such as fertilizer, pesticides, and seed. The costs usually depict local production recommendations and prices. Check with a variety of suppliers to determine costs.

Labor, machinery, and land also are common components. However, each of these may be handled quite differently. Labor is normally budgeted based on an

hourly rate common to your area for similar work completed. Some budgets use multiple rates depending upon whether labor is manual or used to handle equipment (Fig. 1). It is assumed that handling equipment requires more skill and therefore requires a higher hourly rate to obtain an adequate supply of laborers to finish the required tasks. If benefits are given, the costs associated with those benefits should be included in the hourly rate. Unemployment and workmen's compensation also should be included. Remember to include labor charges regardless of whether it is supplied by you or your family, or purchased from the outside labor market. To remain profitable, you need to get an economic return for the labor you provide. Check with local growers and extension personnel to make sure the amount of labor and wage rate you use for your budgets are normal given your existing or proposed production system.

Figure 1.

UC Cooperative Extension Costs Per Acre to Produce Tomatoes Sacramento Valley - 2007 Direct Seeded							
Labor Rate: \$14.90/hr. machine labor \$11.84/hr. non-machine labor			Interest Rate: 10.00% Yield Per Acre: 35.0 Ton				
Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Preplant							
Laser Level - 4% of Acreage	0.00	0	0	0	7	7	
Land Preparation - Stubble Disc & Roll	0.14	3	7	0	0	15	
Land Preparation - Subsoil & Roll x 2X	0.42	7	37	0	0	44	
Land Preparation - Disc & Roll	0.15	3	13	0	0	10	
Land Preparation - Triplane 2X	0.36	6	15	0	0	22	
Land Preparation - Apply Gypsum on 20% of Acreage	0.00	0	0	25	1	26	
Land Preparation - List Beds	0.10	2	4	0	0	6	
Land Preparation - Shape & Fertilize	0.25	4	9	17	0	30	
Weed Control - Roundup & Goal	0.08	1	2	8	0	12	
Weed Control - Roundup	0.08	1	2	9	0	12	
Weed Control - Cultivate 2X	0.26	9	13	0	0	22	
Total Preplant Costs	1.83	37	102	59	8	205	

Figure 1. The above budget from University of California–Davis (Miyao et al., 2007) illustrates a two-tier labor rate with machine labor being paid \$14.90 per hour while non-machine labor receives \$11.84. Also note the specific time allotted for each field operation. This is an example of a specific labor budget.

Machinery is handled quite differently from budget to budget. The ways vary by complexity, with none of the ways being right or wrong. The important thing is that machinery usage is accounted for in the budget. In complex budgets, machinery costs are segmented into variable (or operating) expenses and fixed (or overhead) expenses (Fig. 2). It is important to review the budgets carefully to understand what assumptions were made to determine these costs. For example, a particular field operation per acre cost may have assumed an annual use of 40 hours for an implement (Fig. 3). However, if the actual

usage of the implement was 20 hours or 80 hours instead of the assumed 40, the cost per acre would be substantially different. Other budgets may simply use a custom hire charge common to your area. The custom hire charge would cover the cost of the machinery and often the cost of the machine operator. If custom charges are used, then changes to labor hours should be made to eliminate the possibility of double counting. Regardless of the method used to allocate machinery expenses to the enterprise budget, make sure you understand how it was accomplished particularly as you compare one budget to another.

Figure 2.

UC Cooperative Extension
Hourly Equipment Costs
Sacramento Valley - 2007
Direct Seeded

Yr	Description	Actual Hours Used	Capital Recovery	Costs Per Hour					Total Oper. Costs/Hr	Total Costs/Hr
				Cash Overhead Insurance	Taxes	Repairs	Fuel & Lube	Total		
06	110 HP 2 WD Tractor	1,199.2	4.09	0.15	0.22	2.96	16.89	19.85	24.31	
06	130 HP 2 WD Tractor	1,110.0	4.59	0.17	0.24	3.08	19.96	23.04	28.05	
06	155 HP 2 WD Tractor	1,199.9	6.12	0.23	0.32	4.45	23.79	28.24	34.91	
06	200 HP Crawler	1,600.0	7.96	0.30	0.42	4.40	30.70	35.10	43.78	
06	425 HP Crawler	1,599.4	10.20	0.38	0.54	5.64	65.24	70.88	82.00	
06	92 HP 2 WD Tractor	1,199.6	2.71	0.10	0.14	1.96	19.96	21.92	24.87	
06	ATV	284.5	1.11	0.04	0.05	1.06	0.00	1.06	2.26	
06	Bait Applicator	99.2	1.42	0.06	0.08	0.49	0.00	0.49	2.04	
06	Bed Shaper - 3 Row	199.5	5.25	0.17	0.24	2.72	0.00	2.72	8.37	
06	Cultivator - Alloway 3 Row	199.7	4.04	0.13	0.18	2.09	0.00	2.09	6.44	
06	Cultivator - 3 Row	399.8	3.37	0.08	0.12	2.60	0.00	2.60	6.18	
06	Cultivator - Sled 3 Row	307.1	1.28	0.04	0.06	1.02	0.00	1.02	2.40	
06	Decapper - 15'	199.2	3.15	0.10	0.14	1.36	0.00	1.36	4.75	
06	Disc - Stubble 18'	389.8	14.51	0.36	0.51	8.36	0.00	8.36	23.75	
06	Disc - Finish 25'	199.5	17.68	0.57	0.79	7.15	0.00	7.15	26.18	
06	Ditcher - V	165.8	3.75	0.13	0.18	2.30	0.00	2.30	6.35	
06	Harvester - Tomato - Used	199.6	20.41	0.61	0.85	2.08	39.67	41.75	63.61	

Figure 2. The above budget from University of California–Davis (Miyao et al., 2007) illustrates a more complex machinery budget. Both fixed (capital recovery, insurance and taxes) and operating or variable (repairs, fuel and lube) costs are detailed in the total cost per hour calculation. Note that each tractor and implement used in the production of the crop is itemized.

Figure 3. Estimated Machinery Costs

The following cost estimates are for on-farm use, excluding labor. Depreciation is based on current replacement cost, interest is based on average market rates. Fixed costs will be greater for newer machinery. If annual machine use is greater than that assumed, fixed costs per acre will be lower, and vice versa. Hauling costs are based on a round trip of one mile. Remember these are estimates and they should not take the place of accurate record-keeping. **Diesel fuel is estimated to cost \$2.50 per gallon, delivered to the farm in bulk.**

Operation	Hours of Use Assumed per Year	Fixed Cost per Acre (depreciation, interest, insurance, housing)	Variable Cost per acre (fuel, oil, repairs)
Subsoiling (V-ripper)	120	\$6.00	\$7.10
Moldboard Plow	120	8.00	8.20
Chisel Plow	120	3.50	3.50
Chop Stalks	120	3.90	3.70
Tandem Disk	120	3.30	2.30
Offset Disk	120	3.80	3.00
Peg Tooth Harrow	60	1.60	1.00
Sprayer/disk	120	3.60	2.70
Field Cultivator	120	2.10	2.20
Disk/Field Cultivator	120	2.40	2.40
Bulk Fertilizer Spreader	60	1.60	1.20
NH3 Applicator	120	4.20	4.10
Chisel Plow, NH3 Applic.	120	4.50	4.90
Grain Drill	100	4.80	4.00
Broadcast Seeder	100	1.70	1.00
Planter	100	4.00	3.20

Figure 3. The above estimated machinery costs from Iowa State University (Duffy and Smith, 2008) assumes an annual usage rate. If actual annual usage is different than that assumed in the table, fixed cost will be different. If usage is below the amount illustrated, fixed costs per acre will be higher. If usage is above, fixed costs per acre will be lower.

Most budgets insert a cost for the land used in production at its common rental value or a percent return to land value. If land similar to yours is renting for \$200 per acre in the area you are farming, a rental charge of \$200 should be used for budgeting. Because the land you are using can be farmed by you or rented out to someone else for the common rental rate, this practice allocates a charge to the land asset.

Some budgets include an overhead category to cover expenses associated with buildings, insurance, and interest charges, among other items. Again, it is important to understand what expenses are included and how they were calculated in order to adapt the published budget to fit your use.

Summary

Enterprise budgets can be used for a variety of management decisions including pricing, developing a product mix, and changing production practices. The key to using budgets effectively is to develop them as accurately as possible by reflecting what is going on in your existing or proposed production system. Once your production scale and production system is determined, it is often easiest to begin by adapting an existing published budget. The key to adapting the budget is to understand what assumptions were made in the budget development and make changes to fit your situation. Please contact your land grant university or extension personnel to see what local budgets have been developed for your area.

Available Organic Enterprise Budgets

California (<http://coststudies.ucdavis.edu/>)

- alfalfa hay, establishment and production, Inter-mountain and Sacramento Valley regions
- almonds, sprinkler irrigation, San Joaquin Valley North region
- blueberries, Central and South Coast regions
- broccoli, fresh market, Central Coast region
- grapes, wine, Cabernet Sauvignon, North Coast region
- grapes, wine, Chardonnay, North Coast region
- grapes, raisins, continuous tray, San Joaquin Valley South region
- leaf lettuce, Central Coast region
- beef, cow–calf, 50-head, North Coast region
- strawberries, fresh market, Central Coast region
- walnuts, sprinkler irrigated, North Coast region

University of California, Agriculture and Resource Economics Department also has a library of production budgets (<http://coststudies.ucdavis.edu/>) that includes conventional crops as well as the organic crops listed above.

North Carolina

- North Carolina Organic Vegetable Production Cost Study: includes enterprise budgets for broccoli, kale, lettuce, peppers, salad mix, summer squash, sweet corn, and tomatoes based on actual production costs for three growers in 2001. (<http://www.ncsu.edu/project/arepublication/AREno31.pdf>)

Oregon (<http://arec.oregonstate.edu/oaeb/>)

- broccoli, processed market, Willamette Valley region
- bush beans, processed market, Willamette Valley region
- cauliflower, processed market, Willamette Valley region
- leaf lettuce, fresh market, Willamette Valley region
- radishes, fresh market, Willamette Valley region

- spinach, fresh market, Willamette Valley region
- sweet corn, processed market, Willamette Valley region

Production budgets should be available from your land grant university. Please check with your local research and Extension personnel to see what crop budgets are available.

Further Reading

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