

Crop Enterprise Budget

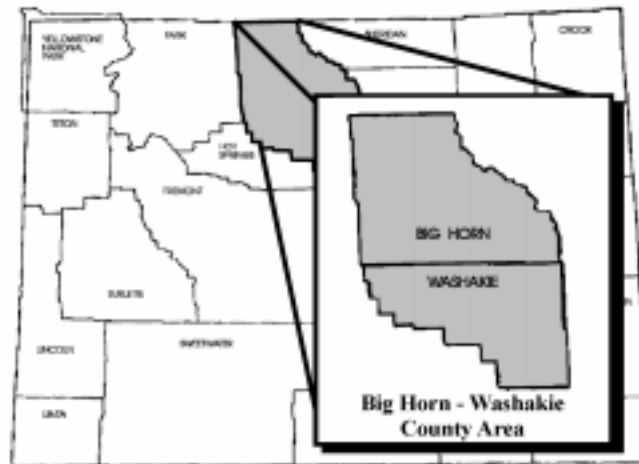
Alfalfa Establishment

Big Horn-Washakie County Area

John P. Hewlett, Farm/Ranch Management Extension Specialist
Dennis Kaan, Farm/Ranch Management Extension Specialist
Jim Gill, Extension Educator
Eric Morrison, Extension Educator
Big Horn and Washakie County Producers

MP-100.2

University of Wyoming - August, 1997



This enterprise budget presents estimated typical costs and returns for malting barley in the Big Horn and Washakie County area of Wyoming. Data presented are not taken from an actual farm situation. A panel of Big Horn and Washakie County producers assisted in outlining the “representative” farm situation described in the budget. Thus, the budget provides a guide to determine costs and returns for specific operations. Production practices presented in the budget are not necessarily “best” management practices. The major assumptions used in this budget are presented below.

Land

This budget is based on an 880-acre farm that produces 265 acres of malting barley grown annually. Other enterprises included on this farm are: alfalfa establishment, 35 acres; alfalfa hay, 105 acres; sugar beets, 250 acres; corn for grain, 90 acres; and corn for silage, 90 acres. The remaining 80 acres include roadways, fence lines, and farmsteads. Owned land is valued at \$1,000 per acre irrigated and wasteland is valued at \$300 per acre.

Leased land is rented on a crop-share basis. A one-third share of gross revenue is paid to the landowner. In return, the landowner pays for one-third of the fertilizer and crop insurance for the crop and one-half the chemical cost for spring weed control. The landowner is also responsible for ownership costs associated with the land, buildings, and irrigation systems, as well as all irrigation water costs.

Labor

Labor is provided by the operator and one 12-month employee and one 8-month employee. All labor, including operator labor, is valued at \$7.33 per hour plus 7.65 percent to cover social security and federal withholding taxes. Labor charges for the owner/operator represent an opportunity cost for the time spent in this enterprise. Some part-time labor may be used on the farm for labor-intensive operations such as harvest.

Capital

The operator provides 70 percent of the long-term capital and 50 percent of the operating capital for this enterprise. Thirty percent of the long-term capital is borrowed at an interest rate of 8.0 percent Annual Percentage Rate (APR). Fifty percent of the operating capital is borrowed at an interest rate of 9.0 percent APR. The interest rates used here are for short-term planning. Real interest rates (interest rates adjusted for expected inflation) should be used for accurate long-term planning.

Machinery, Equipment, and Buildings

A complete list of machinery, equipment, and buildings used in this enterprise and their associated values are provided in Table 1. All resources are assumed to be half depreciated. Estimated operating and ownership costs are given in Table 3. Tables 1 and 3 list only the resources used in this enterprise. Other resources used on the farm are not included. However, the reader should note that the resources

listed in Tables 1 and 3 also might be used in other enterprises on the farm.

Each irrigated acre on the farm is assumed to be irrigated by a fraction of the total irrigation system. Water provided by each irrigation system is broken down as follows: 25 percent concrete ditch, 37.5 percent dirt ditch, and 37.5 percent gated pipe (plastic). All irrigation water is delivered to the distribution network via a delivery system. This method was employed because crops normally will be rotated over all farmed acres eventually. Table 2 presents an estimated cost per acre-inch of providing irrigation water via each irrigation system.

Operations

Operations related to establishing alfalfa hay are listed in chronological order in the enterprise budget. Establishment of alfalfa hay is assumed to occur in barley stubble. As such, land and building costs are assigned to the preceding malting barley enterprise.

Ground preparation for alfalfa establishment consists of burning the barley stubble in mid-August. Alfalfa seed is drilled a few days later. A single irrigation is applied in late August, providing a total of 10 acre-inches of water per acre of alfalfa establishment.

In the following year, the newly established stand provides three cuttings of hay as outlined in the alfalfa hay budget. However no hay is harvested in the establishment year.

Enterprise Budget

Economic costs and returns for alfalfa hay are summarized by operation in the enterprise budget. Costs are broken down by stage of production. General overhead and operator management have been calculated at 5 percent and 10 percent of all cash costs, respectively.

Costs and returns for the crop-share lease arrangement also are summarized in the budget. Costs paid and received by the tenant are listed in the tenant column. Items paid and received by the landowner are included in the landowner column. The far right column has been provided to calculate changes from this base budget for your operation.

Summary

Gross income for the alfalfa hay enterprise is estimated at \$360.55 per acre. Total variable costs are estimated at \$280.58 per acre, with total fixed costs at \$181.68 per acre. The total of all costs for alfalfa hay is estimated at \$462.26 per acre, leaving a net projected return of (\$101.71) per acre. The net projected returns for the lease arrangement are (\$25.77) per acre for the landowner and (\$75.94) per acre for the tenant.

Alfalfa Establishment

Enterprise Budget
Economic Costs and Returns per Acre
Alfalfa Establishment - Big Horn-Washakie County Area
35 Acre Enterprise

RETURNS SECTION -----

| GROSS INCOME Description | Quantity | Unit | \$/Unit | --- Crop-Share --- | | | Your Return |
|--------------------------|----------|------|---------|---------------------------|----------------------|------------------|-------------|
| | | | | Owner-Operator 100% Total | Land-owner 50% Total | Tenant 50% Total | |
| No Gross Receipts | | | | \$0.00 | \$0.00 | \$0.00 | |
| Total GROSS Income | | | | \$0.00 | \$0.00 | \$0.00 | |

VARIABLE COSTS SECTION -----

| VARIABLE COST Description | Dollars per Acre | | ----- M a t e r i a l s ----- | | | Materials Total Cost Per Acre | Owner-Operator | --- Crop-Share --- | | Your Cost |
|----------------------------------|------------------|-----------|-------------------------------|------------------|-------------------|-------------------------------|----------------|--------------------|-----------|-----------|
| | LABOR | MACHINERY | Description | # Units Per Acre | Unit Type \$/unit | | | Land-owner | Tenant | |
| **ANNUAL** | | | | | | | | | | |
| GENERAL OVERHEAD | | | | | | | 3.79 | ---- | 3.79 | |
| OPERATOR MANAGEMENT | | | | | | | 7.58 | ---- | 7.58 | |
| Total ANNUAL | | | | | | | \$11.37 | \$0.00 | \$11.37 | |
| **ESTABLISHMENT** | | | | | | | | | | |
| BURN STUBBLE | Operation | 6.58 | 0.28 | | | | 6.86 | ---- | 6.86 | |
| PLANT ALFALFA | Operation | 1.33 | 2.01 | ALFALFA SEED | 18.000 LBS | 3.50 | 63.00 | 66.34 | 63.00 | 3.34 |
| PULL DITCHES | Operation | 0.17 | 0.23 | | | | 0.40 | ---- | 0.40 | |
| PULL ENDS | Operation | 0.05 | 0.02 | | | | 0.07 | ---- | 0.07 | |
| LAY PIPE | Operation | 0.80 | 0.19 | | | | 0.99 | ---- | 0.99 | |
| DELIVERY SYSTEM | | 0.36 | 0.00 | Purchased Water | | | 2.12 | 2.48 | 2.12 | 0.36 |
| CONCRETE DITCH | | 0.15 | 0.00 | | | | 0.15 | ---- | 0.15 | |
| GATED PIPE | | 0.29 | 0.00 | | | | 0.29 | ---- | 0.29 | |
| DIRT DITCH | | 0.24 | 0.00 | | | | 0.24 | ---- | 0.24 | |
| CLOSE DITCHES | Operation | 0.17 | 0.21 | | | | 0.38 | ---- | 0.38 | |
| PICKUP PIPE | Operation | 0.80 | 0.19 | | | | 0.99 | ---- | 0.99 | |
| Total ESTABLISHMENT | | | | | | | \$79.19 | \$65.12 | \$14.07 | |
| Operating Interest | | | | | | | 5.26 | ---- | 5.26 | |
| Total VARIABLE COST | | | | | | | \$95.82 | \$65.12 | \$30.70 | |
| GROSS INCOME minus VARIABLE COST | | | | | | | (\$95.82) | (\$65.12) | (\$30.70) | |

FIXED COSTS SECTION -----

| FIXED COST Description | Unit | --- Crop-Share --- | | | Your Cost |
|-----------------------------|------|--------------------|------------|--------|-----------|
| | | Owner-Operator | Land-owner | Tenant | |
| Machinery and Equipment: | | | | | |
| Taxes | Acre | 0.20 | ---- | 0.20 | |
| Insurance | Acre | 0.17 | ---- | 0.17 | |
| Long Term Interest | Acre | 1.83 | ---- | 1.83 | |
| Depreciation | Acre | 1.58 | ---- | 1.58 | |
| Buildings and Improvements: | | | | | |
| Taxes | Acre | 0.00 | 0.00 | ---- | |
| Insurance | Acre | 0.00 | 0.00 | ---- | |
| Long Term Interest | Acre | 0.00 | 0.00 | ---- | |
| Depreciation | Acre | 0.00 | 0.00 | ---- | |
| Irrigation: | | | | | |
| Taxes | Acre | 0.10 | 0.10 | ---- | |
| Insurance | Acre | 0.08 | 0.08 | ---- | |
| Long Term Interest | Acre | 1.39 | 1.39 | ---- | |
| Depreciation | Acre | 1.53 | 1.53 | ---- | |

Alfalfa Establishment

| FIXED COSTS SECTION ----- | | | | |
|---------------------------|------|--------------------|----------------|-----------|
| FIXED COST Description | Unit | --- Crop-Share --- | | |
| | | Owner- Operator | Land- owner | Tenant |
| Land: | | | | |
| Taxes | Acre | 0.00 | 0.00 | ---- |
| Long Term Interest | Acre | 0.00 | 0.00 | ---- |
| ----- | | | | |
| Total FIXED Cost | | \$6.87 | \$3.10 | \$3.77 |
| ----- | | | | |
| Total of ALL Cost | | \$102.69 | \$68.22 | \$34.47 |
| ***** | | | | |
| NET PROJECTED RETURNS | | (\$102.69) | (\$68.22) | (\$34.47) |
| ***** | | | | |

TABLE 1. Machinery, Equipment, and Building Value and Use Assumptions

| Resource Name | Current List Price | Current Market Value | Salvage Value | Total Defined Annual Use | Useful Life | Remaining Life |
|-------------------------|-----------------------|----------------------------|------------------|--------------------------------|----------------|-------------------|
| 100HP TRACTOR 2WD | \$41,730 | \$23,542 | \$5,354 | 285 Hours | 5,700 Hours | 2,850 Hours |
| 200HP TRACTOR MFD | \$77,681 | \$43,824 | \$9,967 | 380 Hours | 7,600 Hours | 3,800 Hours |
| 60HP TRACTOR 2WD | \$20,349 | \$11,480 | \$2,611 | 246 Hours | 4,920 Hours | 2,460 Hours |
| DITCHER, 3 POINTV-BLADE | \$2,134 | \$1,123 | \$111 | 26 Hours | 520 Hours | 260 Hours |
| END PULLER 3 ROW | \$1,001 | \$527 | \$52 | 18 Hours | 360 Hours | 180 Hours |
| GRAIN DRILL 15 FT | \$9,148 | \$4,812 | \$477 | 51 Hours | 1,020 Hours | 510 Hours |
| PIPE TRAILER | \$1,631 | \$858 | \$85 | 158 Hours | 3,160 Hours | 1,580 Hours |
| TERRACE BLADE 8 FT | \$1,171 | \$616 | \$61 | 29 Hours | 580 Hours | 290 Hours |
| WEED BURNER | \$53 | \$29 | \$5 | 10 Hours | 200 Hours | 100 Hours |
| CONCRETE DITCH | \$37,736 | \$19,177 | \$619 | 9,971 AcIn | 299,130 AcIn | 149,565 AcIn |
| DELIVERY SYSTEM | \$77,588 | \$39,430 | \$1,272 | 39,958 AcIn | 1,198,740 AcIn | 599,370 AcIn |
| DIRT DITCH | \$20,419 | \$10,377 | \$335 | 14,952 AcIn | 448,560 AcIn | 224,280 AcIn |
| GATED PIPE | \$10,481 | \$5,777 | \$1,073 | 14,952 AcIn | 299,040 AcIn | 149,520 AcIn |
| LABOR HOUSE #1 | | \$22,881 | \$2,288 | | 30 Years | 15 Years |
| LABOR HOUSE #2 | | \$38,136 | \$3,814 | | 30 Years | 15 Years |
| MACHINE SHED 20 X 40 | | \$3,148 | \$315 | | 30 Years | 15 Years |
| METAL SHOP 40 X 80 | | \$61,017 | \$6,102 | | 30 Years | 15 Years |

TABLE 2. Irrigation System Costs per Acre-Inch Delivered

| | Concrete Ditch * | Dirt Ditch* | Gated Pipe* |
|---|---------------------|-----------------|-----------------|
| Variable Costs | | | |
| Repair and Maintenance (Off-Farm) | \$0.0128 | \$0.0253 | \$0.0165 |
| Owner Operation Labor | 0.0107 | 0.0107 | 0.0252 |
| Purchased Water | 0.0500 | 0.0751 | 0.0751 |
| Fixed Costs | | | |
| Taxes | 0.0039 | 0.0032 | 0.0023 |
| Interest on Investment | 0.0541 | 0.0442 | 0.0326 |
| Depreciation..... | 0.0628 | 0.0547 | 0.0262 |
| Insurance | <u>0.0032</u> | <u>0.0027</u> | <u>0.0019</u> |
| Total Cost per Acre-Inch of Irrigation Water Delivered | \$0.1975 | \$0.2159 | \$0.1798 |

* Each distribution system is assumed to receive irrigation water from a central delivery system. This delivery system (buried pipeline, concrete ditch, moss catchers, and tail ditch) has been allocated to each of the distribution systems according to its share of the total irrigation water applied.

Alfalfa Establishment

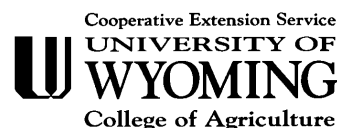
TABLE 3. Alfalfa Establishment Costs Per Acre of Growing Alfalfa

| | <u>Owner- Operator</u> |
|---|----------------------------|
| ESTABLISHMENT COSTS Per Acre of Alfalfa Establishment | \$102.69 |
| Assuming a 3-year stand life gives: | |
| \$102.69 ÷ 3-year stand life = \$34.23/year depreciation cost | |
| DEPRECIATION COST Allocated to Growing Alfalfa | \$ 34.23 |
| <u>LONG-TERM INTEREST COST Allocated to Growing Alfalfa</u> | <u>2.57</u> |
| TOTAL ESTABLISHMENT COST Allocated to Growing Alfalfa | \$ 36.80 |
| Where 105 acres of growing alfalfa are maintained each year, the Alfalfa Establishment Cost Per Acre of Growing Alfalfa becomes: | \$ 0.3505 |

Alfalfa Establishment

TABLE 4. Machinery, Equipment, and Building Cost Calculations

| Machine/Vehicle | Unit | RESOURCE COST PER UNIT OF USE | | | | | | | ENTERPRISE | | | | |
|------------------|---------|-------------------------------|--------------------------|-------------------|--------------|----------------------|---------------------|------------|-----------------------|--------------------------|--------|--------|--------|
| | | -----Variable----- | | | | -----Fixed----- | | | Resource Use per Acre | -----Costs per Acre----- | | TOTAL | |
| | | Fuel and Lube | Operation Labor & Inputs | Repair and Maint. | Hourly Lease | Deprec. and Interest | Taxes and Insurance | TOTAL COST | | Variable | Fixed | | |
| 100HP TRACTOR | 2WD | \$/Hr | \$5.63 | \$0.00 | \$2.50 | \$0.00 | \$7.25 | \$0.80 | \$16.18 | 0.1666 | \$1.35 | \$1.34 | \$2.69 |
| 200HP TRACTOR | MFD | \$/Hr | 11.27 | 0.00 | 6.20 | 0.00 | 10.12 | 1.12 | 28.71 | 0.0400 | 0.70 | 0.45 | 1.15 |
| 60HP TRACTOR | 2WD | \$/Hr | 3.38 | 0.00 | 1.05 | 0.00 | 4.09 | 0.45 | 8.97 | 0.1063 | 0.47 | 0.48 | 0.95 |
| DITCHER, 3 POINT | V-BLADE | \$/Hr | 0.00 | 0.00 | 0.53 | 0.00 | 3.84 | 0.42 | 4.79 | 0.0200 | 0.01 | 0.09 | 0.10 |
| END PULLER | 3 ROW | \$/Hr | 0.00 | 0.00 | 0.08 | 0.00 | 2.61 | 0.28 | 2.97 | 0.0063 | 0.00 | 0.02 | 0.02 |
| GRAIN DRILL | 15 FT | \$/Hr | 0.00 | 0.00 | 5.29 | 0.00 | 6.30 | 0.69 | 12.28 | 0.1666 | 0.88 | 1.16 | 2.04 |
| PIPE TRAILER | | \$/Hr | 0.00 | 0.00 | 1.01 | 0.00 | 0.47 | 0.05 | 1.53 | 0.1000 | 0.10 | 0.05 | 0.15 |
| TERRACE BLADE | 8 FT | \$/Hr | 0.00 | 0.00 | 0.31 | 0.00 | 1.89 | 0.21 | 2.41 | 0.0200 | 0.01 | 0.04 | 0.05 |
| WEED BURNER | | \$/Hr | 1.00 | 0.00 | 0.00 | 0.00 | 0.48 | 0.03 | 1.51 | 0.2857 | 0.29 | 0.15 | 0.44 |
| CONCRETE DITCH | | \$/Ac-In | 0.00 | 0.04 | 0.02 | 0.00 | 0.36 | 0.02 | 0.44 | 2.6500 | 0.16 | 1.01 | 1.17 |
| DELIVERY SYSTEM | | \$/Ac-In | 0.00 | 0.20 | 0.03 | 0.00 | 0.11 | 0.00 | 0.34 | 10.6000 | 2.44 | 1.17 | 3.61 |
| DIRT DITCH | | \$/Ac-In | 0.00 | 0.03 | 0.03 | 0.00 | 0.16 | 0.00 | 0.22 | 3.9700 | 0.24 | 0.64 | 0.88 |
| GATED PIPE | | \$/Ac-In | 0.00 | 0.07 | 0.01 | 0.00 | 0.05 | 0.00 | 0.13 | 3.9700 | 0.32 | 0.20 | 0.52 |
| LABOR HOUSE | #1 | \$/Year | 1,200.00 | 145.40 | 1,000.00 | 0.00 | 3,148.42 | 273.22 | 5,767.04 | 0.0011 | 2.67 | 3.89 | 6.56 |
| LABOR HOUSE | #2 | \$/Year | 1,200.00 | 145.40 | 1,000.00 | 0.00 | 5,247.51 | 455.39 | 8,048.30 | 0.0011 | 2.67 | 6.48 | 9.15 |
| MACHINE SHED | 20 X 40 | \$/Year | 100.00 | 36.35 | 100.00 | 0.00 | 433.16 | 37.59 | 707.10 | 0.0011 | 0.27 | 0.53 | 0.80 |
| METAL SHOP | 40 X 80 | \$/Year | 720.00 | 87.24 | 100.00 | 0.00 | 8,395.94 | 728.61 | 10,031.79 | 0.0011 | 1.03 | 10.37 | 11.40 |



Trade or brand names used in this publication are used only for the purpose of educational information. The information given herein is supplied with the understanding that no discrimination is intended, and no endorsement information of products by the Agricultural Research Service, Federal Extension Service, or State Cooperative Extension Service is implied. Nor does it imply approval of products to the exclusion of others, which may also be suitable.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Glen Whipple, Director, Cooperative Extension Service, University of Wyoming, Laramie, WY 82071-3354.

Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, national origin, sex, age, religion, political belief, disability, veteran status, and marital or familial status. Persons with disabilities who require alternative means for communication or program information (Braille, large print, audiotape, etc.) should contact their local UW Extension Office. To file a complaint, write the UW Employment Practices/Affirmative Action Office, University of Wyoming, P.O. Box 3354, Laramie, Wyoming 82071-3354.