

# Selecting Alternative Crops - Module 4

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# Outline

- Gathering needed information
- Agronomics
  - Practices for optimal yields
- Economics
  - Practices to reduce variable costs
- Putting it all together- the enterprise budget

# Agronomics

- Agronomics before economics
- Short list of agronomic considerations on pg 32
- Inputs & timing
- Information supplied by producer or Extension research

# Yields

- Determined by soil, climate & irrigation
- Amount and timing of irrigation
- Activity #1
  
- Previous enterprise budgets area specific
- NASS data on average yields

# Variable Costs

- Only incurred if crop produced
  - Seeds, irrigation, fertilizers, insecticides/herbicides, labor
  - Additional variable costs on pg 34
- Can be lowered (or increased) by changing practices
- Irrigation, utilities, fertilizers

# Irrigation

- System efficiency – distribution
  - Increased yield with distribution uniformity
- Center pivot w/ LEPA
  - 95%-98% gets to crop
  - Chemigation and fertigation
- Drip
- Activity #2

# Utilities

- Power source for pump
- Pump efficiency
- System pressure
- Pump horsepower
- Activity #3
  - Diesel \$3.00/gal, electric \$0.11/kwh natural gas \$10.56/MFC, LP \$3.00/gal

# Fertilizers

- Use of separate products or a combination product
- Application methods
  - Delivery frequency
  - Delivery type
- Costs per unit of N
- Activity #4



# Fixed Costs

- Must be paid whether a crop is produced or not
- Cash overhead costs
  - Land, insurance, taxes
- Non- cash overhead costs
  - Capital recovery
  - Establishment costs, buildings, equipment

# Returns

- State –wide average prices usually available at National Agriculture Statistics Services database

# Components of an Enterprise Budget

- Investment summary
- Establishment costs
- Costs & Returns
- Monthly Cash Flow

# Investment Summary

- What will be needed to conduct this operation?
- Lists all tools & equipment needed
- Cost at time of purchase
- How long it will last

Investment Summary for Alfalfa Establishment								
Annual Equipment Costs								
Description	Purchase Price	Useful Life (Yrs)	Salvage Value	Annual Capital Recovery	Annual Insurance	Annual Taxes	Annual Repairs	Annual Fuel & Lube
<b>Buildings, Improvements, and Equipment</b>								
Ow ner House	\$ 200,000.00	50.00	\$ 200,000.00	\$ -	\$ 1,332.00	\$ 2,000.00	\$ 4,000.00	
Shop (30X40) & Tools	\$ 46,000.00	25.00	\$ 4,600.00	\$ 1,656.00	\$ 168.50	\$ 253.00	\$ 506.00	
Land	\$4,623,000.00	150.00	\$ 4,623,000.00	\$ -	\$ -	\$46,230.00	\$ -	
Metal Equipment Shed (40x60)	\$ 55,000.00	25.00	\$ 5,500.00	\$ 1,980.00	\$ 201.47	\$ 302.50	\$ 605.00	
Implements	\$ 72,499.00	15.00	\$ 7,249.90	\$ 4,349.94	\$ 265.56	\$ 398.74	\$ 797.49	
Alfalfa Establishment	\$ 334,737.16	6.00		\$ 55,789.53				
Sub Total Pre-Establishment	\$4,996,499.00	NA	\$ 4,840,349.90	\$ 7,985.94	\$ 1,967.53	\$49,184.24	\$ 5,908.49	
Sub Total Post-Establishment	\$5,331,236.16	NA	\$ 4,840,349.90	\$ 63,775.47	\$ 1,967.53	\$49,184.24	\$ 5,908.49	
<b>Machinery and Vehicles</b>								
150 HP Tractor	\$ 123,965.00	15.00	\$ 12,396.50	\$ 7,437.90	\$ 454.08	\$ 681.81	\$ 1,363.62	\$ 5,454.46
95 HP 4WD Tractor	\$ 60,699.00	15.00	\$ 6,069.90	\$ 3,641.94	\$ 222.34	\$ 333.84	\$ 667.69	\$ 2,670.76
74 HP Tractor w / loader	\$ 24,999.00	15.00	\$ 2,499.90	\$ 1,499.94	\$ 91.57	\$ 137.49	\$ 274.99	\$ 1,099.96
Sickle Sw ather w / 14 foot header	\$ 69,800.00	10.00	\$ 6,980.00	\$ 6,282.00	\$ 255.68	\$ 383.90	\$ 767.80	\$ 3,071.20
Balew agon	\$ 146,499.00	10.00	\$ 14,649.90	\$ 13,184.91	\$ 536.63	\$ 805.74	\$ 1,611.49	\$ 6,445.96
Baler (large)	\$ 119,723.00	10.00	\$ 11,972.30	\$ 10,775.07	\$ 438.55	\$ 658.48	\$ 1,316.95	\$ 5,267.81
Baler (small)	\$ 25,187.00	10.00	\$ 2,518.70	\$ 2,266.83	\$ 92.26	\$ 138.53	\$ 277.06	\$ 1,108.23
Hydraulic Rake	\$ 13,670.00	15.00	\$ 1,367.00	\$ 820.20	\$ 50.07	\$ 75.19	\$ 150.37	\$ 601.48
4-Wheeler	\$ 10,000.00	5.00	\$ 1,000.00	\$ 1,800.00	\$ 36.63	\$ 55.00	\$ 110.00	\$ 440.00
1 Ton Pickup	\$ 50,000.00	8.00	\$ 5,000.00	\$ 5,625.00	\$ 183.15	\$ 275.00	\$ 550.00	\$ 2,200.00
Sub Total	\$ 644,542.00	NA	\$ 64,454.20	\$ 53,333.79	\$ 2,360.96	\$ 3,544.98	\$ 7,089.96	\$ 28,359.85
<b>Total</b>	<b>\$5,975,778.16</b>	<b>NA</b>	<b>\$ 4,904,804.10</b>	<b>\$117,109.26</b>	<b>\$ 4,328.48</b>	<b>\$52,729.23</b>	<b>\$ 12,998.45</b>	<b>\$ 28,359.85</b>

# Establishment Costs

- What will need to be done the first year of planting the crop?
- First year of perennial
- Higher costs / less returns
- 'Bottom line' capitalized over life of crop

<b>Operating Establishment Costs</b>						
	<b>Total Units</b>	<b>Unit</b>	<b>Price/Cost Per Unit</b>	<b>Total Cost/Value</b>	<b>Total Cost/Value Per Acre</b>	<b>Your Farm</b>
<b>OPERATING COSTS</b>						
Rodent Control	400.00	Acre	\$ 1.50	\$ 600.00	\$ 1.50	
Insecticide	400.00	Acre	\$ -	\$ -	\$ -	
Herbicide	400.00	Acre	\$ 55.00	\$ 22,000.00	\$ 55.00	
Fertilizer	400.00	Acre	\$ 52.00	\$ 20,800.00	\$ 52.00	
Irrigation	400.00	Acre	\$ 102.50	\$ 41,000.00	\$ 102.50	
Alfalfa Seed	20.00	Lbs/Acre	\$ 2.60	\$ 20,800.00	\$ 52.00	
Roundup	2.00	Quarts/Acre	\$ 14.50	\$ 11,600.00	\$ 29.00	
Operator Labor	1.00	Annual	\$ 30,000.00	\$ 30,000.00	\$ 75.00	
Accounting & Legal	1.00	Annual	\$ 2,000.00	\$ 2,000.00	\$ 5.00	
Fuel & Lube	1.25	Annual	\$ 28,359.85	\$ 35,449.81	\$ 88.62	
Maintenance	1.00	Annual	\$ 12,998.45	\$ 12,998.45	\$ 32.50	
Utilities	1.00	Annual	\$ 7,000.00	\$ 7,000.00	\$ 17.50	
Miscellaneous	400.00	Acre	\$ 5.00	\$ 2,000.00	\$ 5.00	
Interest Operating Capital	\$ 164,998.61	\$	\$ 0.065	\$ 5,362.45	\$ 13.41	
<b>TOTAL OPERATING COSTS</b>				\$ 211,610.72	\$ 529.03	
<b>OWNERSHIP COSTS</b>						
<b>CASH OVERHEAD COSTS</b>						
Liability Insurance				\$ 1,749.00	\$ 4.37	
Office & Travel				\$ 3,000.00	\$ 7.50	
Annual Investment Insurance				\$ 4,328.48	\$ 10.82	
Annual Investment Taxes				\$ 52,729.23	\$ 131.82	
<b>TOTAL CASH OVERHEAD COSTS</b>				\$ 61,806.71	\$ 154.52	
<b>NONCASH OVERHEAD COSTS (Capital Recovery)</b>						
Buildings, Improvements, & Equipment				\$ 7,985.94	\$ 19.96	
Machinery & Vehicles				\$ 53,333.79	\$ 133.33	
<b>TOTAL NONCASH OVERHEAD COSTS</b>				\$ 61,319.73	\$ 153.30	
<b>TOTAL OWNERSHIP COSTS</b>				\$ 123,126.44	\$ 307.82	
<b>TOTAL COSTS</b>				\$ 334,737.16	\$ 836.84	
<b>YEAR ONE INCOME</b>						
Alfalfa Hay	0.00	Tons	\$ 134.00	\$ -	\$ -	
<b>TOTAL GROSS INCOME</b>				\$ -	\$ -	
<b>TOTAL ESTABLISHMENT INVESTMENT</b>				\$ 334,737.16	\$ 836.84	

# Costs & Returns

- How much can be expected in returns?
- What costs need to be incurred?
  
- Gives the 'bottom line'
- Bottom line will change with scale of operation



Northwestern Nevada Alfalfa Hay Production Costs and Returns, 400 acres, 2008						
	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre	Your Farm
<b>GROSS INCOME</b>						
Alfalfa Hay	6.00	Tons	\$ 134.00	\$ 321,600.00	\$ 804.00	
Aftermath Grazing	4.00	head	\$ 22.50	\$ 36,000.00	\$ 90.00	
<b>TOTAL GROSS INCOME</b>				\$ 357,600.00	\$ 894.00	
<b>OPERATING COSTS</b>						
Rodent Control	400.00	Acre	\$ 1.50	\$ 600.00	\$ 1.50	
Insecticide	400.00	Acre	\$ 30.00	\$ 12,000.00	\$ 30.00	
Herbicide	400.00	Acre	\$ 55.00	\$ 22,000.00	\$ 55.00	
Fertilizer	400.00	Acre	\$ 42.00	\$ 16,800.00	\$ 42.00	
Irrigation	400.00	Acre	\$ 111.00	\$ 44,400.00	\$ 111.00	
Operator Labor	1.00	Annual	\$ 30,000.00	\$ 30,000.00	\$ 75.00	
Accounting & Legal	1.00	Annual	\$ 2,000.00	\$ 2,000.00	\$ 5.00	
Fuel & Lube	1.00	Annual	\$ 28,359.85	\$ 28,359.85	\$ 70.90	
Maintenance	1.00	Annual	\$ 12,998.45	\$ 12,998.45	\$ 32.50	
Utilities	1.00	Annual	\$ 7,000.00	\$ 7,000.00	\$ 17.50	
Miscellaneous	400.00	Acre	\$ 5.00	\$ 2,000.00	\$ 5.00	
Operating Capital Interest	\$ 142,526.64	\$	\$ 0.065	\$ 4,632.12	\$ 11.58	
<b>TOTAL OPERATING COSTS</b>				\$ 182,790.41	\$ 456.98	
<b>INCOME ABOVE OPERATING COSTS</b>				\$ 174,809.59	\$ 437.02	
<b>OWNERSHIP COSTS</b>						
<b>CASH OVERHEAD COSTS</b>						
Liability Insurance				\$ 1,749.00	\$ 4.37	
Office & Travel				\$ 3,000.00	\$ 7.50	
Annual Investment Insurance				\$ 4,328.48	\$ 10.82	
Annual Investment Taxes				\$ 52,729.23	\$ 131.82	
<b>TOTAL CASH OVERHEAD COSTS</b>				\$ 61,806.71	\$ 154.52	
<b>NONCASH OVERHEAD COSTS (Capital Recovery)</b>						
Buildings, Improvements, & Equipment				\$ 63,775.47	\$ 159.44	
Machinery & Vehicles				\$ 53,333.79	\$ 133.33	
<b>TOTAL NONCASH OVERHEAD COSTS</b>				\$ 117,109.26	\$ 292.77	
<b>TOTAL OWNERSHIP COSTS</b>				\$ 178,915.97	\$ 447.29	
<b>TOTAL COSTS</b>				\$ 361,706.38	\$ 904.27	
<b>NET PROJECTED RETURNS</b>				\$ (4,106.38)	\$ (10.27)	

# Monthly Cash Flow

- Shows income and expenditures by month
- Just for operation costs
- Useful for knowing when operating loans will be needed and when they can be paid back
- Usually required to obtain loan

Monthly Summary of Returns and Expenses										
Description	January	February	March	April	May	June	July	August	September	October
Production:										
Alfalfa Hay	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,400.00	\$ 80,400.00	\$ 80,400.00	\$ 80,400.00	\$ -
Aftermath Grazing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 36,000.00
Total Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,400.00	\$ 80,400.00	\$ 80,400.00	\$ 80,400.00	\$ -
Operating Inputs:										
Rodent Control	\$ -	\$ -	\$ 150.00	\$ 150.00	\$ 75.00	\$ 75.00	\$ 75.00	\$ 75.00	\$ -	\$ -
Insecticide	\$ -	\$ -	\$ 1,714.29	\$ 1,714.29	\$ 1,714.29	\$ 1,714.29	\$ 1,714.29	\$ 1,714.29	\$ 1,714.29	\$ -
Herbicide	\$ -	\$ -	\$ 3,142.86	\$ 3,142.86	\$ 3,142.86	\$ 3,142.86	\$ 3,142.86	\$ 3,142.86	\$ 3,142.86	\$ -
Fertilizer	\$ -	\$ -	\$ 16,800.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Irrigation	\$ -	\$ -	\$ 6,342.86	\$ 6,342.86	\$ 6,342.86	\$ 6,342.86	\$ 6,342.86	\$ 6,342.86	\$ 6,342.86	\$ -
Operator Labor	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00
Accounting & Legal	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67
Fuel & Lube	\$ 1,492.62	\$ 1,492.62	\$ 2,985.25	\$ 2,985.25	\$ 2,985.25	\$ 2,985.25	\$ 2,985.25	\$ 2,985.25	\$ 2,985.25	\$ 1,492.62
Maintenance	\$ 684.13	\$ 684.13	\$ 1,368.26	\$ 1,368.26	\$ 1,368.26	\$ 1,368.26	\$ 1,368.26	\$ 1,368.26	\$ 1,368.26	\$ 684.13
Utilities	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33	\$ 583.33
Miscellaneous	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67	\$ 166.67
Interest OC	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01	\$ 386.01
Total Operating Costs	\$ 5,979.43	\$ 5,979.43	\$ 36,306.18	\$ 19,506.18	\$ 19,431.18	\$ 19,431.18	\$ 19,431.18	\$ 19,431.18	\$ 19,356.18	\$ 5,979.43
Net Returns	\$ (5,979.43)	\$ (5,979.43)	\$ (36,306.18)	\$ (19,506.18)	\$ (19,431.18)	\$ 60,968.82	\$ 60,968.82	\$ 60,968.82	\$ 61,043.82	\$ (5,979.43)

# Which Crop?

- Compare 'bottom line' of enterprise budgets
- Economies of scale
- Water availability
  
- Activity #5

# Risk

- Production
  - Producer knowledge
  - Equipment modification
- Market
  - Price fluctuation
- General, financial, legal & human
- Western Risk Management Library

# Thank you!

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Questions?



University of Nevada  
Cooperative Extension



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