2012 COSTS OF PRODUCING ALFALFA HAY UNDER CENTER PIVOT IRRIGATION IN THE COLUMBIA BASIN OF WASHINGTON STATE

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Table 1. 2012 Input Cost Assumptions for Producing Alfalfa

Item	Unit	Price/unit
Fuel:		
Diesel	gal	$4.00
Gas	gal	$3.85
Seed:		
Alfalfa seed	lb	$4.00
Fertilizer:		
Dry Nitrogen	lb	$0.49
Dry Phosphate	lb	$1.17
Dry Potash	lb	$0.70
Dry Sulfur	lb	$0.38
Zinc	lb	$2.84
Boron	lb	$6.40
Pesticides:		
Raptor	ounce	$5.61
Velpar Alfamax	lb	$16.70
Labor:		
Hourly machine labor	hour	$20.00
Land Cost:		
Cash rent	hour	$300.00
Interest Rates:		
Operating loan	percent	6.50%
Machinery loan	percent	7.50%

Table 2. Schedule of Operations for Establishing Alfalfa Hay Following Wheat or Barley in the Columbia Basin, Center Pivot Irrigation

Month	Operation	Tooling	Materials/Service
Fall	Irrigation	Center Pivot Leased with Land	$14.40 Power, $16.20 Water, $3.60 Labor, $5.40/Acre Repair (36% Annual Cost)
August	Disc and Pack	250HP-WT, 26' Tandum Disc and Pack	Custom hired $50 per acre 2 passes through field
August	Soil Test	Custom	$0.30/Acre
August	Fertilize	Custom Ground Application	$9.00/Acre, Fertilizer approx. $206/Acre
August	Plant	150HP-WT, 20' Double Disc Drill	20 lbs Alfalfa Seed @ $4/lb

Table 3. Production Costs for Establishing Alfalfa Hay in Fall Following Wheat or Barley in the Columbia Basin, Center Pivot Irrigation

Item	Quantity Per Acre	Unit	Price or Cost		Value or Cost/Acre
Variable Costs					
Seed:				**$98.00**	
Alfalfa Seed	20	lb	$4.00		$80.00
Custom Seeding	1	acre	$18.00		$18.00
Fertilizer:				**$215.58**	
Dry Nitrogen	0	lb	$0.49		$0.00
Dry Phosphate	92	lb	$0.90		$82.89
Dry Potash	140	lb	$0.64		$89.66
Dry Sulfur	25	lb	$0.28		$7.04
Zinc	5	lb	$2.84		$14.20
Boron	2	lb	$6.40		$12.79
Custom Application	1	acre	$9.00		$9.00
Pesticides:				**$42.63**	
Herbicide - Raptor	6	oz	$5.61		$33.63
Herbicide Custom Application	1	acre	$9.00		$9.00
Custom Work:				**$50.30**	
Soil Test	1	acre	$0.30		$0.30
Custom Disc and Pack 2X	1	acre	$50.00		$50.00
					$0.00
					$0.00
Irrigation:				**$39.60**	
Irrigation Power-CP	0.36	acre	$40.00		$14.40
Water Access	0.36	acre	$45.00		$16.20
Irrigation Repairs	0.36	acre	$15.00		$5.40
Irrigation Labor-CP	0.18	acre	$20.00		$3.60
Other:				**$18.46**	
Fuel	2.50	gal	$4.00		$10.00
Lubricants	1	acre	$1.22		$1.22
Machinery Repairs	1	acre	$2.24		$2.24
Machinery Labor	0.25	acre	$20.00		$5.00
					$0.00
					$0.00
Overhead					$23.23
Operating Interest					$12.58
Total Variable Costs					**$500.38**

Table 3. Production Costs for Establishing Alfalfa Hay in Fall Following Wheat or Barley in the Columbia Basin, Center Pivot Irrigation

Fixed Costs:	
Machinery depreciation	$6.33
Machinery interest	$4.24
Machinery insurance, taxes housing, license	$2.25
Land Cost	$0.00
Total Fixed Costs	**$12.82**
Fixed Costs per Unit	
Total Costs per Acre	**$513.20**

Notes:
Land cost are allocated to the preceding wheat/barley crop and all straw has been removed.

Table 4. Production Costs for Alfalfa Hay Year 1 Following Establishment, Center Pivot Irrigation, Large (1-ton) Bales, Custom Haying

Item	Quantity Per Acre	Unit	Price or Cost		Value or Cost/Acre
Gross Returns					
Alfalfa Hay	8	ton	$200.00		$1,600.00
Operating Inputs					
Fertilizer:				**$0.00**	
Dry Nitrogen	0	lb	$0.49		$0.00
Dry Phosphate	0	lb	$1.17		$0.00
Dry Potash	0	lb	$0.70		$0.00
Dry Sulfur	0	lb	$0.38		$0.00
Pesticides:				**$0.00**	
Herbicides may or may not be					$0.00
required after establishment.					$0.00
Custom Work:				**$368.00**	
Swath	4	acre	$20.00		$80.00
Rake	4	acre	$10.00		$40.00
Bale 3x4x8	8	ton	$17.00		$136.00
Haul and Stack	8	ton	$9.00		$72.00
Tarping	8	ton	$5.00		$40.00
					$0.00
					$0.00
Irrigation:				**$110.00**	
Irrigation Power-CP	1	acre	$45.00		$45.00
Water Access	1	acre	$40.00		$40.00
Irrigation Repairs	1	acre	$15.00		$15.00
Irrigation Labor-CP	0.5	acre	$20.00		$10.00
Other:				**$32.72**	
Gopher control	1	acre	$5.00		$5.00
Fuel	2.28	gal	$4.00		$9.12
Lubricants	1	acre	$0.80		$0.80
Machinery Repairs	1	acre	$1.80		$1.80
Haystack Insurance	8	ton	2		$16.00
					$0.00
					$0.00
Overhead					$25.54
Operating Interest					$19.36
Total Variable Costs					**$555.62**

Table 4. Production Costs for Alfalfa Hay Year 1 Following Establishment, Center Pivot Irrigation, Large (1-ton) Bales, Custom Haying

Variable Costs per Unit				$69.45
Net Returns Above Variable Costs				**$1,044.38**
Fixed Costs:				
Machinery depreciation				$5.42
Machinery interest				$3.08
Machinery insurance, taxes housing, licence				$2.79
Management (5% of Total Cost)				$43.35
Establishment Cost				$193.77
Land Cost	1	acre	$300.00	$300.00
Total Fixed Costs				**$548.41**
Fixed Costs per Unit				$68.55
Total Costs per Acre				**$1,104.03**
Total Cost per Unit				$138.00
Estimated Net Return				**$495.97**

Notes:

Table 5. Production Costs for Alfalfa Hay in the Columbia Basin, Center Pivot Irrigation, Large (1-ton) Bales Years 2 and 3, Custom Haying

Item	Quantity Per Acre	Unit	Price or Cost		Value or Cost/Acre
Gross Returns					
Alfalfa Hay	8	ton	$200.00		$1,600.00
Operating Inputs					
Fertilizer:				**$215.88**	
Dry Nitrogen	0	lb	$0.49		$0.00
Dry Phosphate	92	lb	$0.90		$82.89
Dry Potash	140	lb	$0.64		$89.66
Dry Sulfur	25	lb	$0.28		$7.04
Zinc	5	lb	$2.84		$14.20
Boron	2	lb	$6.40		$12.79
Custom Application	1	acre	$9.00		$9.00
Soil Test	1	acre	$0.30		$0.30
Pesticides:				**$42.40**	
Herbicide - Velpar Alfamax	2	lb	$16.70		$33.40
Custom Application	1	acre	$9.00		$9.00
Custom Work:				**$368.00**	
Swath	4	acre	$20.00		$80.00
Rake	4	acre	$10.00		$40.00
Bale 3x4x8	8	ton	$17.00		$136.00
Haul and Stack	8	ton	$9.00		$72.00
Tarping	8	ton	$5.00		$40.00
Irrigation:				**$110.00**	
Irrigation Power-CP	1	acre	$45.00		$45.00
Water Access	1	acre	$40.00		$40.00
Irrigation Repairs	1	acre	$15.00		$15.00
Irrigation Labor-CP	0.5	acre	$20.00		$10.00
Other:				**$32.72**	
Haystack Insurance	8	ton	$2.00		$16.00
Gopher control	1	acre	$5.00		$5.00
Fuel	2.28	gal	$4.00		$9.12
Lubricants	1	acre	$0.80		$0.80
Machinery Repairs	1	acre	$1.80		$1.80
					$0.00
					$0.00
Overhead					$38.45
Operating Interest					$24.99

Table 5. Production Costs for Alfalfa Hay in the Columbia Basin, Center Pivot Irrigation, Large (1-ton) Bales Years 2 and 3, Custom Haying

Total Variable Costs				**$832.44**
Variable Costs per Unit				$104.06
Net Returns Above Variable Costs				**$767.56**
Fixed Costs:				
Machinery depreciation				$5.42
Machinery interest				$3.08
Machinery insurance, taxes housing, license				$2.79
Management (5% of Total Cost)				$57.19
Establishment Cost				$193.77
Land Cost	1	acre	$300.00	$300.00
Total Fixed Costs				**$562.25**
Fixed Costs per Unit				$70.28
Total Costs per Acre				**$1,394.69**
Total Cost per Unit				$174.34
Estimated Net Return				**$205.31**

Notes:

Table 8. Breakeven Analysis for Large (1-ton) Bales Years 2 and 3

Breakeven Analysis:	-	Base	+
	10%		10%
		Yield	
Price Breakeven	7.2	8	8.8
Operating Cost Breakeven	116	104	95
Ownership Cost Breakeven	78	70	64
Total Cost Breakeven	194	174	158
		Price	
Yield Breakeven	$180.00	$200.00	$220.00
Operating Cost Breakeven	4.6	4.2	3.8

Table 5. Production Costs for Alfalfa Hay in the Columbia Basin, Center Pivot Irrigation, Large (1-ton) Bales Years 2 and 3, Custom Haying

Ownership Cost Breakeven	3.1	2.8	2.6

Table 6. Production Costs for Alfalfa Hay in the Columbia Basin, Center Irrigation, Small Two Tie Bales Year 1, Custom Haying

Item	Quantity Per Acre	Unit	Price or Cost		Value or Cost/Acre
Gross Returns					
Alfalfa Hay	8	ton	$220.00		$1,760.00
Operating Inputs					
Fertilizer:				**$0.00**	
Dry Nitrogen	0	lb	$0.49		$0.00
Dry Phosphate	0	lb	$1.17		$0.00
Dry Potash	0	lb	$0.70		$0.00
Dry Sulfur	0	lb	$0.38		$0.00
Pesticides:				**$0.00**	
Herbicides may or maynot be					$0.00
required after establishment.					$0.00
Custom Work:				**$446.00**	
Swath	4	acre	$20.00		$80.00
Rake	4	acre	$10.00		$40.00
Bale 2 Tie 80 lb bales	200	bale	$0.95		$190.00
Haul and Stack	200	bale	$0.40		$80.00
Tarping	8	ton	$7.00		$56.00
					$0.00
					$0.00
Irrigation:				**$110.00**	
Irrigation Power-CP	1	acre	$45.00		$45.00
Water Access	1	acre	$40.00		$40.00
Irrigation Repairs	1	acre	$15.00		$15.00
Irrigation Labor-CP	0.5	acre	$20.00		$10.00
Other:				**$32.72**	
Gopher control	1	acre	$5.00		$5.00
Fuel	2.28	gal	$4.00		$9.12
Lubricants	1	acre	$0.80		$0.80
Machinery Repairs	1	acre	$1.80		$1.80
Haystack Insurance	8	ton	$2.00		$16.00
					$0.00
					$0.00
Overhead					$29.44
Operating Interest					$22.32
Total Variable Costs					**$640.48**
Variable Costs per Unit					$80.06

Net Returns Above Variable Costs				**$1,119.52**
Fixed Costs:				
Machinery depreciation				$5.42
Machinery interest				$3.08
Machinery insurance, taxes housing, license				$2.79
Management (5% of Total Cost)				$47.59
Establishment Cost				$193.77
Land Cost	1	acre	$300.00	$300.00
Total Fixed Costs				**$552.65**
Fixed Costs per Unit				$69.08
Total Costs per Acre				**$1,193.13**
Total Cost per Unit				$149.14
Estimated Net Return				**$566.87**

Notes:

Table 7. Production Costs for Alfalfa Hay in the Columbia Basin, Center Pivot Irrigation, Small Two Tie Bales Years 2 and 3, Custom Haying

Item	Quantity Per Acre	Unit	Price or Cost		Value or Cost/Acre
Gross Returns					
Alfalfa Hay	8	ton	$220.00		$1,760.00
Operating Inputs					
Fertilizer:				**$215.88**	
Dry Nitrogen	0	lb	$0.49		$0.00
Dry Phosphate	92	lb	$0.90		$82.89
Dry Potash	140	lb	$0.64		$89.66
Dry Sulfur	25	lb	$0.28		$7.04
Zinc	5	lb	$2.84		$14.20
Boron	2	lb	$6.40		$12.79
Custom Application	1	acre	$9.00		$9.00
Soil Test	1	acre	$0.30		$0.30
Pesticides:				**$42.40**	
Herbicide - Velpar Alfamax	2	lb	$16.70		$33.40
Custom Application	1	acre	$9.00		$9.00
					$0.00
Custom Work:				**$446.00**	
Swath	4	acre	$20.00		$80.00
Rake	4	acre	$10.00		$40.00
Bale 2 Tie 80 lb bales	200	bale	$0.95		$190.00
Haul and Stack	200	bale	$0.40		$80.00
Tarping	8	ton	$7.00		$56.00
Irrigation:				**$110.00**	
Irrigation Power-CP	1	acre	$45.00		$45.00
Water Access	1	acre	$40.00		$40.00
Irrigation Repairs	1	acre	$15.00		$15.00
Irrigation Labor-CP	0.5	acre	$20.00		$10.00
Other:				**$32.72**	
Haystack Insurance	8	ton	$2.00		$16.00
Gopher control	1	acre	$5.00		$5.00
Fuel	2.28	gal	$4.00		$9.12
Lubricants	1	acre	$0.80		$0.80
Machinery Repairs	1	acre	$1.80		$1.80
					$0.00
					$0.00
Overhead					$42.35
Operating Interest					$27.53

Table 7. Production Costs for Alfalfa Hay in the Columbia Basin, Center Pivot Irrigation, Small Two Tie Bales Years 2 and 3, Custom Haying

Total Variable Costs				**$916.88**
Variable Costs per Unit				$114.61
Net Returns Above Variable Costs				**$843.12**
Fixed Costs:				
Machinery depreciation				$5.42
Machinery interest				$3.08
Machinery insurance, taxes housing, license				$2.79
Management (5% of Total Cost)				$61.41
Establishment Cost				$193.77
Land Cost	1	acre	$300.00	$300.00
Total Fixed Costs				**$566.47**
Fixed Costs per Unit				$70.81
Total Costs per Acre				**$1,483.35**
Total Cost per Unit				$185.42
Estimated Net Return				**$276.65**

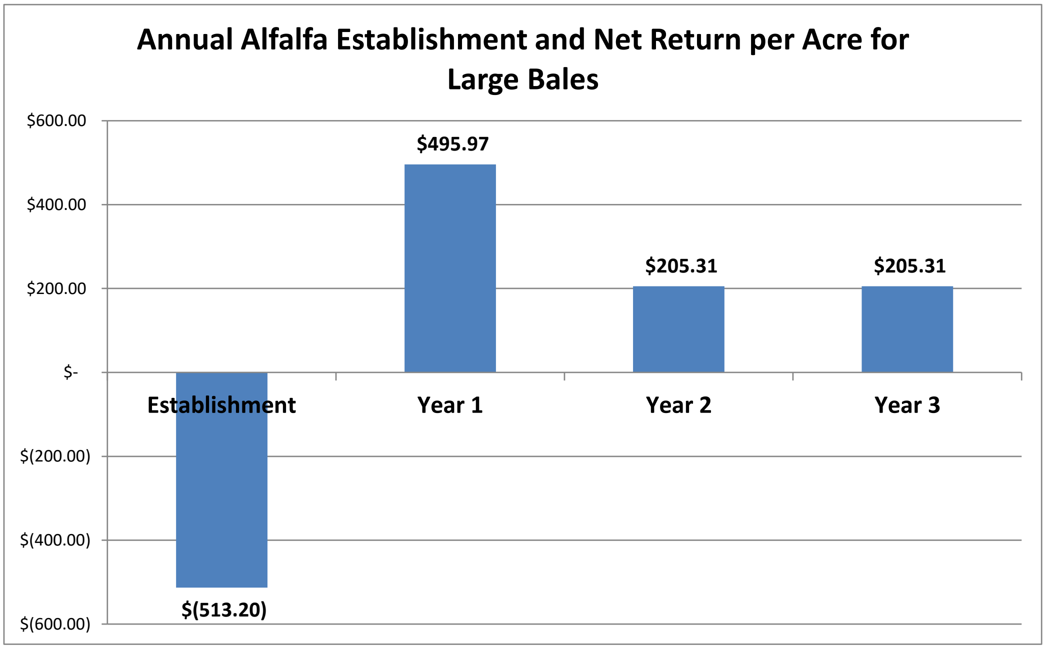
Notes:

Breakeven Analysis:

	-	Base	+
	10%		10%
		Yield	
Price	7.2	8	8.8
Operating Cost Breakeven	127	115	104
Ownership Cost Breakeven	79	71	64
Total Cost Breakeven	206	185	169

		Price	
Yield	$198.00	$220.00	$242.00
Operating Cost Breakeven	4.6	4.2	3.8
Ownership Cost Breakeven	2.9	2.6	2.3
Total Cost Breakeven	7.5	6.7	6.1

	Annual	Cumulative		
Establishment	$ (513.20)	$ (513.20)	IRR	44%
Year 1	$ 495.97	$ (17.23)	NPV	$309.80
Year 2	$ 205.31	$ 188.07		
Year 3	$ 205.31	$ 393.38		



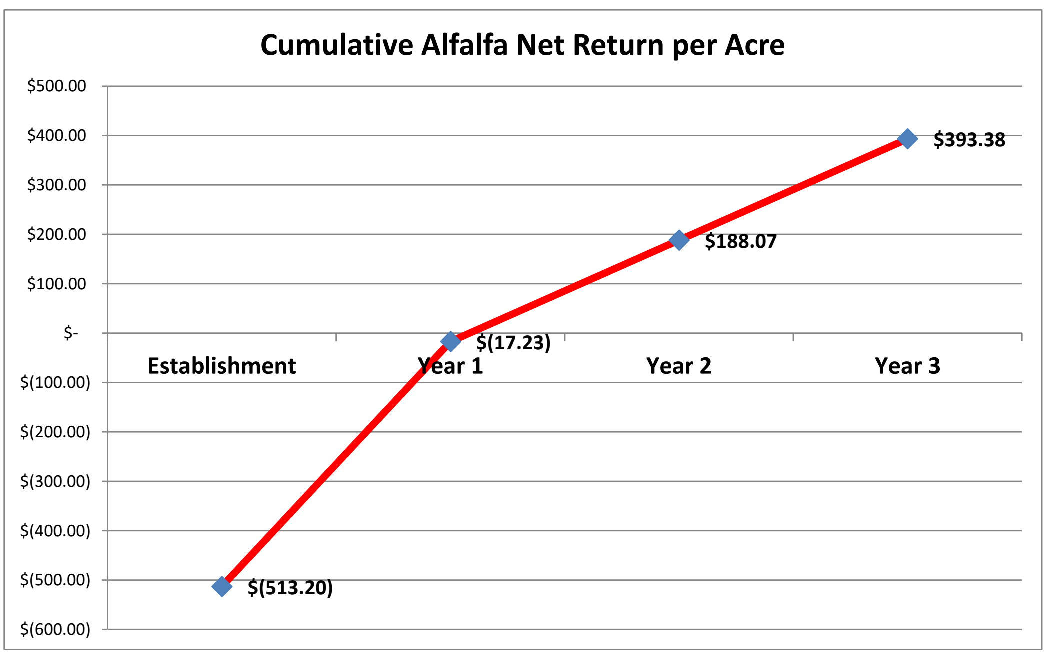


TABLE 9. SHORT FORM ESTABLISHMENT - FALL SEEDING

	LABOR, MACHINERY, CUSTOM HIRE $/acre	MATERIALS $/acre	TOTAL $/acre	YOUR FIGURES
CULTURAL OPERATIONS: *1				
Disc and Pack 2X	$25.00		$50.00	_______
Fertilizing *2	$9.30	$206.58	$215.88	_______
Plant Seed cost 20 lbs/a @ $4/lb	$18.00	$80.00	$98.00	_______
Herbicide Raptor (6 oz. full labeled rate)	$9.00	$33.63	$42.63	_______
Irrigation (labor & pivot cost) *3	$23.40	$16.20	$39.60	_______
OTHER CHARGES:				
Fuel, Repairs, Labor and other expenses	$5.00	$13.46	$18.46	_______
General Overhead *4			$23.23	_______
Operating Capital Interest 6.50%, 6 mo			$12.58	_______
Fixed Costs - Depreciation, Insurance, Taxes, etc. *5			$12.82	_______
Total Establishment Cost			$513.20	_______
Amortized Est. Costs (3 yrs. @ 6.50%) *6			$193.77	_______

Notes:

1. The first year expenses for these or equivalent operations are accounted for in the fall seeded establishment year, and amortized over the alfalfa stand's production period.

2. Fertilizer amount was calc. using soil test from the Othello variety plots and current prices. Fertilizer price includes 92 lb. P2O5, 140 lb. K2O, 25 lb. Sulfur, 5 lb. Zinc and 1 lb. Boron.

3. 36% of estimated annual total irrigation costs
4. Estimated at 5% of all costs.
5. Land rent not charged on establishment year
6. Amortized establishment costs over 4 year productive life would be $149.80.

TABLE 10. SHORT FORM YEAR 1 FOLLOWING ESTABLISHMENT PRODUCTION LARGE BALES

GROSS RETURNS:	**YIELD** Tons/acre	**PRICE** $/ton	**GROSS RETURN** $/acre	**YOUR FIGURES**
Alfalfa Hay	8	$200.00	$1,600.00	_______
CULTURAL OPERATIONS:	**LABOR, MACHINERY, CUSTOM HIRE $/acre**	**MATERIALS $/acre**	**TOTAL $/acre**	**YOUR FIGURES**
Fertilizing	$0.00	$0.00	$0.00	_______
Herbicide Ap.	$0.00	$0.00	$0.00	_______
Irrigation (Labor and Pivot Expenses	$65.00	$45.00	$110.00	_______
Gopher Control	$3.00	$2.00	$5.00	_______
HAYING:				
Swathing 4X	$20.00		$80.00	_______
Raking 4X	$10.00		$40.00	_______
Baling ($17.00/ton)	$17.00		$136.00	_______
Haul and Stack ($9.00/ton)	$9.00		$72.00	_______
Tarping ($5.00/ton)	$5.00		$40.00	_______
Hay Insurance		$16.00	$16.00	_______
OTHER CHARGES:				
Fuel, Repairs, Labor and other expenses	$1.80	$9.92	$11.72	_______
General Overhead 5% of variable costs			$25.54	_______
Operating Capital Interest 6.50%, 6 mo			$19.36	_______
Fixed Costs - Depreciation, Insurance, Taxes, etc.			$11.29	_______
Management Return			$43.35	_______
Land Cost			$300.00	_______
Amortized Establishment Cost			$193.77	_______
TOTAL COST PER ACRE PER YEAR			$1,104.03	_______
NET RETURN PER ACRE PER YEAR			$495.97	_______
Notes:				

TABLE 11. SHORT FORM YEARS 2 and 3 FULL PRODUCTION LARGE BALES

GROSS RETURNS:	YIELD Tons/acre	PRICE $/ton	GROSS RETURN $/acre	YOUR FIGURES
Alfalfa Hay	8	$200.00	$1,600.00	_______
CULTURAL OPERATIONS:	**LABOR, MACHINERY, CUSTOM HIRE $/acre**	**MATERIALS $/acre**	**TOTAL $/acre**	**YOUR FIGURES**
Fertilizing	$9.30	$206.58	$215.88	_______
Herbicide Ap. (2 lb/a Velpar Alfamax)	$9.00	$33.40	$42.40	_______
Irrigation (Labor and Pivot Expenses	$65.00	$45.00	$110.00	_______
Gopher Control	$3.00	$2.00	$5.00	_______
HAYING:				
Swathing 4X	$20.00		$80.00	_______
Raking 4X	$10.00		$40.00	_______
Baling ($17.00/ton)	$17.00		$136.00	_______
Haul and Stack ($9.00/ton)	$9.00		$72.00	_______
Tarping ($5.00/ton)	$5.00		$40.00	_______
Hay Insurance		$16.00	$16.00	_______
OTHER CHARGES:				
Fuel, Repairs, Labor and other expenses	$1.80	$9.92	$11.72	_______
General Overhead 5% of variable costs			$38.45	_______
Operating Capital Interest 6.50%, 6 mo			$24.99	_______
Fixed Costs - Depreciation, Insurance, Taxes, etc.			$11.29	_______
Management Return			$57.19	_______
Land Cost			$300.00	_______
Amortized Establishment Cost			$193.77	_______
TOTAL COST PER ACRE PER YEAR			$1,394.69	_______
NET RETURN PER ACRE PER YEAR			$205.31	_______
Notes:				

TABLE 12. SHORT FORM YEAR 1 FOLLOWING ESTABLISHMENT SMALL 2 TIE BALES

GROSS RETURNS:	YIELD Tons/acre	PRICE $/ton	GROSS RETURN $/acre	YOUR FIGURES
Alfalfa Hay	8	$220.00	$1,760.00	_______
CULTURAL OPERATIONS:	**LABOR, MACHINERY, CUSTOM HIRE $/acre**	**MATERIALS $/acre**	**TOTAL $/acre**	**YOUR FIGURES**
Fertilizing	$0.00	$0.00	$0.00	_______
Herbicide Ap.	$0.00	$0.00	$0.00	_______
Irrigation (Labor and Pivot Expenses	$65.00	$45.00	$110.00	_______
Gopher Control	$3.00	$2.00	$5.00	_______
HAYING:				
Swathing 4X	$20.00		$80.00	_______
Raking 4X	$10.00		$40.00	_______
Baling ($0.95/bale 80 lb bales)	$0.95		$190.00	_______
Haul and Stack ($0.40/bale)	$0.40		$80.00	_______
Tarping ($7.00/ton)	$7.00		$56.00	_______
Hay Insurance		$16.00	$16.00	_______
OTHER CHARGES:				
Fuel, Repairs, Labor and other expenses	$1.80	$9.92	$11.72	_______
General Overhead 5% of variable costs			$29.44	_______
Operating Capital Interest 6.50%, 6 mo			$22.32	_______
Fixed Costs - Depreciation, Insurance, Taxes, etc.			$11.29	_______
Management Return			$47.59	_______
Land Cost			$300.00	_______
Amortized Establishment Cost			$193.77	_______
TOTAL COST PER ACRE PER YEAR			$1,193.13	_______
NET RETURN PER ACRE PER YEAR			$566.87	_______
Notes:				

TABLE 13. SHORT FORM YEARS 2 and 3 FULL PRODUCTION SMALL 2 TIE BALES

GROSS RETURNS:	YIELD Tons/acre	PRICE $/ton	GROSS RETURN $/acre	YOUR FIGURES
Alfalfa Hay	8	$220.00	$1,760.00	_______
CULTURAL OPERATIONS:	**LABOR, MACHINERY, CUSTOM HIRE $/acre**	**MATERIALS $/acre**	**TOTAL $/acre**	**YOUR FIGURES**
Fertilizing	$9.30	$206.58	$215.88	_______
Herbicide Ap. (2 lb/a Velpar Alfamax)	$9.00	$33.40	$42.40	_______
Irrigation (Labor and Pivot Expenses	$65.00	$45.00	$110.00	_______
Gopher Control	$3.00	$2.00	$5.00	_______
HAYING:				
Swathing 4X	$20.00		$80.00	_______
Raking 4X	$10.00		$40.00	_______
Baling ($0.95/bale 80 lb bales)	$0.95		$190.00	_______
Haul and Stack ($0.40/bale)	$0.40		$80.00	_______
Tarping ($7.00/ton)	$7.00		$56.00	_______
Hay Insurance		$16.00	$16.00	_______
OTHER CHARGES:				
Fuel, Repairs, Labor and other expenses	$1.80	$9.92	$11.72	_______
General Overhead 5% of variable costs			$42.35	_______
Operating Capital Interest 6.50%, 6 mo			$27.53	_______
Fixed Costs - Depreciation, Insurance, Taxes, etc.			$11.29	_______
Management Return			$61.41	_______
Land Cost			$300.00	_______
Amortized Establishment Cost			$193.77	_______
TOTAL COST PER ACRE PER YEAR			$1,483.35	_______
NET RETURN PER ACRE PER YEAR			$276.65	_______
Notes:				