

ALFALFA,

OATS, AND

PASTURE HAY

HARVESTING COSTS

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Agricultural Extension Service  
University of California  
Siskiyou County

## ALFALFA, OATS, AND PASTURE HAY HARVESTING COSTS

This cost analysis was developed with the cooperation of two farmers with different types of mechanization.

Farm A is highly mechanized with a higher investment per ton of alfalfa produced. Farm B is considered a one man operation, and has a lower investment per ton.

Each system has its own merits and maybe of help to you in deciding which way to mechanize your present system.

Thought should be given to modify your barns so that this new machinery can be used.

On Farm A, 140 pound bales are produced which requires the use of machinery for handling.

After the hay is cut and lays in windrows for two days, it is combined into larger rows and baled the next day. Three men can put up hay yielding two tons per cutting at the rate of 80 tons per day.

The operator of Farm A believes that the equivalent of two full time men is eliminated.

He also believes that an additional cost amounting to 10 percent of the total should be included for planning and management.

Machine life, output per hour or season, and machine maintenance are major factors affecting the cost and the success of these haying operations. The costs indicated are what the farmers reported. In a few instances A. D. Reed, Machinery Costs and Performance, AXT-336, 1970, was used for costs. Length of life is determined by wear out or obsolescence.

Depreciation and interest charges are figured on the basis of 10 percent salvage value where noted, otherwise, machine was figured to zero or complete wear out.

Footnotes on each page show how these calculations were made for all equipment.

A summary of the two operations will be found on page 14.

FARM A

Cost of 12' Hydro-Static, with conditioner & cab		\$9,300.00	
Life - 6 years			
Annual Overhead Costs			
Depreciation <sup>1</sup>		\$1,395.00	
Interest <sup>2</sup>		358.00	
Other <sup>3</sup>		186.00	
TOTAL		\$1,939.00	
Cash Operating Costs			
	Per hour	Tons Per hour	Per ton
Labor	\$3.00	5	\$ .60
Fuel - 2½ gal/hr. @ 22¢	.55	5	.11
Repairs <sup>4</sup>			.23
Miscellaneous <sup>5</sup>			.06
TOTAL			\$1.00
Total Cost Per Ton at Varying Outputs			
	Cost per ton		
Tons	Overhead	Cash	Total
500	\$3.88	\$1.00	\$4.88
1,000	1.94	1.00	2.94
1,500	1.29 <sup>6</sup>	1.00	2.29
2,000	.97	1.00	1.97
2,500	.78	1.00	1.78
3,000	.65	1.00	1.65
3,500	.55	1.00	1.55

<sup>1</sup>\$9,300 less 10% salvage ÷ 6 years

<sup>2</sup>\$9,300 plus 10% salvage ÷ 2 = average value x 7%

<sup>3</sup>\$9,300 x 2% to cover taxes, insurance, and storage of equipment

<sup>4</sup>\$350 per year (amount reported) ÷ 1,500 tons

<sup>5</sup>Cash operating cost x 6% for telephone, etc.

<sup>6</sup>\$1,939 per year ÷ 1,500 tons

FARM A

COSTS TO COMBINE TWO WINDROWS FOR BALING

Cost of V-Rake Life - 10 years	\$1,200.00		
Annual Overhead Costs			
Depreciation <sup>1</sup>	\$120.00		
Interest <sup>2</sup>	42.00		
Other <sup>3</sup>	24.00		
<b>TOTAL</b>	<b>\$186.00</b>		
Cash Operating Costs			
	Per hour	Tons Per hour	Per ton
Labor	\$3.00	15	\$ .20
Tractor <sup>4</sup>	1.66	15	.11
Repairs <sup>5</sup>			.04
Miscellaneous			.05
<b>TOTAL</b>			<b>\$ .40</b>
Total Cost Per Ton at Varying Outputs			
	Cost Per Ton		
Tons	Overhead	Cash	Total
500	\$ .37	\$ .40	\$ .77
1,000	.19	.40	.59
1,500	.12 <sup>6</sup>	.40	.52
2,000	.09	.40	.49
2,500	.07	.40	.47
3,000	.06	.40	.46
3,500	.05	.40	.45

<sup>1</sup> \$1,200 ÷ 10 years

<sup>2</sup> \$1,200 ÷ 2 = average x 7%

<sup>3</sup> \$1,200 x 2% to cover tax insurance and housing

<sup>4</sup> Refer to page 7

<sup>5</sup> Repairs to rake only, \$60 per year (amount reported) ÷ 1,500 tons

<sup>6</sup> \$186 per year ÷ 1,500 tons

FARM A

COST OF BALING

Cost of Baler		\$12,000.00	
Life - 12 years			
Annual Overhead Costs			
Depreciation <sup>1</sup>		\$900.00	
Interest <sup>2</sup>		462.00	
Other <sup>3</sup>		240.00	
TOTAL		\$1,602.00	
Cash Operating Costs			
	Per hour	Tons Per hour	Per ton
Labor	\$3.00	12	\$ .25
Fuel - Diesel 2½ gal @ 18¢	.45	12	.04
Repairs <sup>4</sup>			.10
Twine			.85
Miscellaneous			.06
TOTAL			\$1.30
Total Cost Per Ton at Varying Outputs			
		Cost per ton	
Tons	Overhead	Cash	Total
500	\$3.20	\$1.30	\$4.50
1,000	1.60	1.30	2.90
1,500	1.07 <sup>5</sup>	1.30	2.37
2,000	.80	1.30	2.10
2,500	.64	1.30	1.94
3,000	.53	1.30	1.83
3,500	.46	1.30	1.76

<sup>1</sup> \$1,200 less 10% salvage ÷ 12 years

<sup>2</sup> \$1,200 plus 10% salvage ÷ 2 = average x 7%

<sup>3</sup> \$1,200 x 2% to cover taxes, insurance, and housing

<sup>4</sup> \$150 per year (amount reported) ÷ 1,500 tons

<sup>5</sup> \$1,602 per year ÷ 1,500 tons

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FARM A

COST OF HAULING BALES TO STORAGE

Cost of bale loader - cab model		\$12,000.00	
Life - 10 years			
Annual Overhead Costs			
Depreciation <sup>1</sup>		\$1,080.00	
Interest <sup>2</sup>		462.00	
Other <sup>3</sup>		240.00	
TOTAL		\$1,782.00	
Cash Operating Costs			
	Per hour	Tons Per hour	Per ton
Labor	\$3.00	9	\$ .33
Fuel - gas 4 gal/hr. @ 22¢	.88	9	.10
Repairs <sup>4</sup>			.17
Miscellaneous			.05
TOTAL			\$ .65
Total Cost Per Ton at Varying Outputs			
	Cost Per Ton		
Tons	Overhead	Cash	Total
500	\$3.56	\$ .65	\$4.21
1,000	1.78	.65	1.43
1,500	1.19 <sup>5</sup>	.65	1.84
2,000	.89	.65	1.54
2,500	.71	.65	1.36
3,000	.59	.65	1.24
3,500	.51	.65	1.16

<sup>1</sup>\$12,000 less 10% ÷ 10 years

<sup>2</sup>\$12,000 plus 10% salvage ÷ 2 = average x 7%

<sup>3</sup>\$12,000 x 2% to cover taxes, insurance, and housing

<sup>4</sup>\$150 per year (amount reported) ÷ 1,500 tons

<sup>5</sup>\$1,782 per year ÷ 1,500 tons

FARM A

COST OF STACKING BALES IN BARN

Cost of used Forklift - 10 ton capacity	\$2,000.00		
Cost of new squeeze	1,700.00		
Life - 10 years			
<b>TOTAL</b>	<b>\$3,700.00</b>		
Annual Overhead Costs			
Depreciation <sup>1</sup>	\$370.00		
Interest <sup>2</sup>	129.50		
Other <sup>3</sup>	74.00		
<b>TOTAL</b>	<b>\$573.50</b>		
Cash Operating Costs			
	Per hour	Tons Per hour	Per ton
Labor	\$3.00	9	\$ .33
Fuel - gas 2 gal/hr. @ 22¢	.44	9	.05
Repairs <sup>4</sup>			.07
Miscellaneous			.05
<b>TOTAL</b>			<b>\$ .50</b>
Total Cost Per Ton at Varying Outputs			
	Cost Per Ton		
Tons	Overhead	Cash	Total
500	\$ .57	\$ .50	\$1.07
1,000	.29	.50	.79
1,500	.19 <sup>5</sup>	.50	.69
2,000	.14	.50	.64
2,500	.11	.50	.61
3,000	.10	.50	.60
3,500	.08	.50	.58

<sup>1</sup>\$3,700 with no salvage

<sup>2</sup>\$3,700 ÷ 2 = average x 7%

<sup>3</sup>\$3,700 x 2% to cover taxes, insurance, and housing

<sup>4</sup>\$100 per year (amount reported) ÷ 1,500 tons

<sup>5</sup>\$573.50 ÷ 2 = \$286.75 ÷ 1,500 tons

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As equipment is used an equal amount for other purposes.

FARM A

COST OF OPERATING 35 HP WHEEL DIESEL TRACTOR

Cost of tractor	\$4,000.00		
Life - 10 years			
Annual Overhead Costs			
Depreciation <sup>1</sup>	\$360.00		
Interest <sup>2</sup>	154.00		
Other <sup>3</sup>	80.00		
<b>TOTAL</b>	<b>\$594.00</b>		
Cash Operating Cost			
	Per hour	Tons Per hour	Per hour
Labor			
Fuel - Diesel 1½ gal/hr. @ 18¢			\$ .27
Repairs <sup>4</sup>			.40
<b>TOTAL</b>			<b>\$ .67</b>
Total Cost Per Hour at Varying Outputs			
	Cost per hour		
Hours	Overhead	Cash	Total
100	\$5.94	\$ .67	\$6.61
200	2.97	.67	3.64
300	1.98	.67	2.65
400	1.49	.67	2.16
500	1.19	.67	1.86
600	.99 <sup>5</sup>	.67	1.66
700	.85	.67	1.52
800	.74	.67	1.41
900	.66	.67	1.33
1,000	.59	.67	1.26

<sup>1</sup>\$4,000 less 10% ÷ 10 years

<sup>2</sup>\$4,000 plus 10% salvage ÷ 2 = average x 7%

<sup>3</sup>\$4,000 x 2% to cover taxes, insurance, and housing

<sup>4</sup>\$4,000 x 1% ÷ 100 hours to establish repairs per hour

<sup>5</sup>\$594 per year ÷ 600 hours



FARM B

COST OF SWATHING

900 Tons Harvested			
Cost of 12' used swather with conditioner Life - 7 years		\$4,500.00	
Annual Overhead Costs			
Depreciation <sup>1</sup>		\$578.57	
Interest <sup>2</sup>		173.25	
Other <sup>3</sup>		90.00	
<b>TOTAL</b>		<b>\$841.82</b>	
Cash Operating Cost			
	Per hour	Tons Per hour	Per Ton
Labor	\$3.00	5	\$ .60
Fuel - gas 4½ gal/hr @ 22¢	1.00	5	.20
Repairs <sup>4</sup>			.33
Miscellaneous			.07
<b>TOTAL</b>			<b>\$1.20</b>
Total Cost Per Ton at Varying Outputs			
	Cost Per Ton		
Tons	Overhead	Cash	Total
300	\$2.81	\$1.20	\$4.01
400	2.10	1.20	3.30
500	1.68	1.20	2.88
600	1.40	1.20	2.60
700	1.20	1.20	2.40
800	1.05	1.20	2.25
900	.94 <sup>5</sup>	1.20	2.14
1,000	.84	1.20	2.04

<sup>1</sup> \$4,500 less 10% salvage ÷ 7 years

<sup>2</sup> \$4,500 plus 10% salvage ÷ 2 = average x 7%

<sup>3</sup> \$4,500 x 2% to cover taxes, insurance, and housing

<sup>4</sup> \$300 per year (amount reported) ÷ 900 tons

<sup>5</sup> \$841.82 ÷ 900 tons

FARM B

35 HP WHEEL DIESEL TRACTOR

Cost of 35 hp WD tractor (new)		\$4,500.00	
Life - 10 years			
Annual Overhead Costs			
Depreciation <sup>1</sup>		\$405.00	
Interest <sup>2</sup>		173.25	
Other <sup>3</sup>		90.00	
<b>TOTAL</b>		<b>\$668.25</b>	
Cash Operating Costs			
	Per hour	Tons Per hour	Per hour
Fuel - Diesel 1.9 gal @ 18¢	\$ .35		\$ .35
Repairs <sup>4</sup>	.65		.65
<b>TOTAL</b>			<b>\$1.00</b>
Total Cost Per Hour at Varying Outputs			
	Cost per hour		
Hours	Overhead	Cash	Total
100	\$6.68	\$1.00	\$7.68
200	3.34	1.00	4.34
300	2.23	1.00	3.23
400	1.67	1.00	2.67
500	1.34	1.00	2.34
600	1.11 <sup>5</sup>	1.00	2.11
700	.95	1.00	1.95
800	.84	1.00	1.84
900	.74	1.00	1.74
1,000	.67	1.00	1.67

<sup>1</sup>\$4,500 less 10% salvage ÷ 10 years

<sup>2</sup>\$4,500 plus 10% salvage ÷ 2 = average x 7%

<sup>3</sup>\$4,500 x 2% to cover taxes, insurance, and housing

<sup>4</sup>Machinery Costs and Performance, AXT-336, 1970

<sup>5</sup>\$668.25 ÷ 600 hours yearly use

FARM B

COST OF RAKING

Cost of 12" side delivery rake Life - 20 years				\$450.00
Annual Overhead Costs				
Depreciation <sup>1</sup>				\$ 22.50
Interest <sup>2</sup>				15.75
Other <sup>3</sup>				9.00
<b>TOTAL</b>				<b>\$47.25</b>
Cash Operation Cost				
	Per hour	Tons Per hour		Per ton
Labor	\$3.00	5		\$ .60
Tractor - 35 hp WD	2.11	5		.42
Repairs <sup>4</sup>	.60	5		.12
Miscellaneous				.01
<b>TOTAL</b>				<b>\$1.15</b>
Total Cost Per Ton at Varying Outputs				
	Cost Per Ton			
Tons	Overhead	Cash	Total	1/3 time
300	\$ .16	\$1.15	\$1.31	\$ .44
400	.12	1.15	1.27	.42
500	.09	1.15	1.24	.41
600	.08	1.15	1.23	.41
700	.07	1.15	1.22	.41
800	.06	1.15	1.21	.40
900	.05 <sup>5</sup>	1.15	1.20	.40
1,000	.05	1.15	1.20	.40

<sup>1</sup>\$450 ÷ 20 years - no salvage

<sup>2</sup>\$450 ÷ 2 = average x 7%

<sup>3</sup>\$450 x 2% to cover taxes, insurance, and housing

<sup>4</sup>Machinery Costs and Performance, AXT-336, 1970

<sup>5</sup>\$47.25 ÷ 900 tons

FARM B

COST OF BALING

Cost of PTO 1-Twine Baler Life - 7 years	\$3,500.00
Annual Overhead Cost	
Depreciation <sup>1</sup>	\$357.14
Interest <sup>2</sup>	157.50
Other <sup>3</sup>	70.00
<b>TOTAL</b>	<b>\$584.64</b>
Cash Operation Costs	
	Tons
	Per hour      Per hour      Per ton
Labor	\$3.00      5      \$ .60
Tractor	2.11      5      .42
Repairs <sup>4</sup>	.22
Supplies - twine <sup>5</sup>	.59
Miscellaneous	.12
<b>TOTAL</b>	<b>\$1.95</b>
Total Cost Per Ton at Varying Outputs	
	Cost per ton
Tons	Overhead      Cash      Total
300	\$1.95      \$1.95      \$3.90
400	1.46      1.95      3.41
500	1.17      1.95      3.12
600	.97      1.95      2.92
700	.84      1.95      2.79
800	.73      1.95      2.68
900	.65 <sup>6</sup> 1.95      2.60
1,000	.58      1.95      2.58

<sup>1</sup>\$3,500 - \$1,000 ÷ 7 years (\$1,000 trade-in value)

<sup>2</sup>\$3,500 + \$1,000 ÷ 2 = average x 7% (\$1,000 trade-in value)

<sup>3</sup>\$3,500 x 2% to cover taxes, insurance, and housing

<sup>4</sup>\$200 per year (amount reported) ÷ 900 tons

<sup>5</sup>Twine - \$9.50 per carton ÷ 16 ton (400 bales at 80 lbs)

<sup>6</sup>\$584.64 ÷ 900 tons

FARM B

USED 40 HP WHEEL DIESEL TRACTOR

Cost of 40 HP WD Tractor (used)		\$1,150.00	
Life - 10 years			
Annual Overhead Cost			
Depreciation <sup>1</sup>		\$115.00	
Interest <sup>2</sup>		40.25	
Other <sup>3</sup>		23.00	
TOTAL		\$178.25	
Cash Operation Costs			
	Per hour	Tons Per hour	Per hour
Fuel - Diesel 2.5 gal @ 18¢	\$ .45		\$ .45
Repairs <sup>4</sup>	.65		.65
TOTAL			\$1.10
Total Cost Per Hour at Varying Outputs			
		Cost per hour	
Hours	Overhead	Cash	Total
100	\$1.78	\$1.10	\$2.88
200	.89	1.10	1.99
300	.59 <sup>5</sup>	1.10	1.69
400	.45	1.10	1.55
500	.36	1.10	1.46

<sup>1</sup>\$1,150 ÷ 10 years

<sup>2</sup>\$1,150 ÷ 2 = average x 7%

<sup>3</sup>\$1,150 x 2% to cover taxes, insurance, and housing

<sup>4</sup>Machinery Costs and Performance, AXT-336, 1970

<sup>5</sup>\$178.25 ÷ 300 hours yearly use

FARM B

COST OF LOADING BALES TO BARN AND STACKING - 2 MILES ROUND TRIP.

Cost of Loader	\$1,400.00
Cost of Fork Attachment	950.00
Cost of Accumulator (attached to baler)	1,600.00
Cost of Trailer to haul bales	450.00
Life of all items - 10 years	
<b>TOTAL</b>	<b>\$4,400.00</b>

Annual Overhead Cost

Depreciation <sup>1</sup>	\$440.00
Interest <sup>2</sup>	154.00
Other <sup>3</sup>	88.00
<b>TOTAL</b>	<b>\$682.00</b>

Cash Operating Costs

	Per hour	Tons Per hour	Per ton
Labor	\$3.00	5	\$ .60
Tractor - 40 hp	1.69	5	.34
Repairs <sup>4</sup>			.11
Miscellaneous			.10
<b>TOTAL</b>			<b>\$1.15</b>

Total Cost Per Ton at Varying Outputs

Tons	Cost per ton		
	Overhead	Cash	Total
300	\$2.27	\$1.15	\$3.42
400	1.71	1.15	2.86
500	1.36	1.15	2.51
600	1.14	1.15	2.29
700	.97	1.15	2.12
800	.85	1.15	2.00
900	.76 <sup>5</sup>	1.15	1.91
1,000	.68	1.15	1.83

<sup>1</sup> \$4,400 ÷ 10 years

<sup>2</sup> \$4,400 ÷ 2 = average x 7%

<sup>3</sup> \$4,400 x 2% to cover taxes, insurance, and housing

<sup>4</sup> \$100 per year (amount reported) ÷ 900 tons yearly use

<sup>5</sup> \$682.00 ÷ 900 tons yearly use

SUMMARY

FARM A

1,500 Tons Hay Harvested

Operation	Cost per ton		
	Overhead	Cash	Total
Swathing - 12'	\$1.29	\$1.00	\$2.29
Combine two windrows for baling	.12	.40	.52
Bale - 3 twine	1.07	1.30	2.37
Haul to barn	1.19	.65	1.84
Stack in barn	.19	.50	.69
<b>TOTAL</b>	<b>\$3.86</b>	<b>\$3.85</b>	<b>\$7.71</b>

Equipment Investment for 1,500 Tons

Swather	\$ 9,300.00
V-Rake	1,200.00
Baler	12,000.00
Bale loader	12,000.00
Stacker	3,700.00
Tractor	4,000.00

**TOTAL** \$42,200.00

Per Ton \$28.13

FARM B

900 Tons Hay Harvested

Operation	Cost per ton		
	Overhead	Cash	Total
Swathing - 12'	\$ .94	\$1.20	\$2.14
Raking	.02	.38	.40
Baling - 2-twine PTO	.65	1.95	2.60
Haul to barn and stack 2 miles round trip	.76	1.15	1.91
<b>TOTAL</b>	<b>\$2.37</b>	<b>\$4.68</b>	<b>\$7.05</b>

Equipment Investment for 900 Tons

Swather - 12' (used)	\$ 4,500.00
Side Rake	450.00
Baler	3,500.00
Bale loading equipment & trailer	4,400.00
Tractors - 35 hp WD	4,500.00
Tractor - 40 hp WD	1,150.00

**TOTAL** \$18,500.00

Per Ton \$20.56

The cash cost shown above for the larger operation is 83¢ per ton less than the smaller operation. The overhead costs are higher which can be reduced by increasing tonnage. For example, if 3,000 tons were handled the overhead costs would be cut in half from \$3.86 per ton to \$1.93.