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**Commodity
Costs and Returns
Estimation
Handbook**

A Report of the AAEA Task Force on Commodity Costs and Returns

July 20, 1998

Ames, Iowa

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Tab 10.1

Table 10.1

		Year	Inflation rate within year	Nominal i within year	Inflation rate between years	Nominal i between years
Real Interest rate	0.02					
Inflation rate in year 1	0.05	-6	0.05	0.071	0	0.02
Nominal interest rate in year 1	0.071	-5	0.05	0.071	0	0.02
Adjustment for Cost	0.5	-4	0.05	0.071	0	0.02
		-3	0.05	0.071	0	0.02
		-2	0.05	0.071	0	0.02
		-1	0.05	0.071	0	0.02
		0	0.05	0.071	0	0.02
		1	0.05	0.071	0.05	0.071

Time	Nominal Cost Expenditure point Year i	Nominal Income end year i	Nominal Cost end year i	Cost adjusted end year	Income adjusted end year	Cost adjusted end year	Income adjusted end year	Net Income adjusted end year	Net Income adjusted end year	
					0	0	1	1	0	1
	-6									
	-5	1500	1552.336948	1713.905	0.000	1835.593	0.000	-1713.905	-1835.593	
	-4	190	196.6293467	212.838	0.000	227.949	0.000	-212.838	-227.949	
	-3	190	196.6293467	208.665	0.000	223.480	0.000	-208.665	-223.480	
	-2	190	196.6293467	204.573	0.000	219.098	0.000	-204.573	-219.098	
	-1	190	196.6293467	200.562	0.000	214.802	0.000	-200.562	-214.802	
	0	190	196.6293467	196.629	0.000	210.590	0.000	-196.629	-210.590	
	1	1000	4000	1034.891299	966.285	3734.827	1034.891	4000.000	2768.542	2965.109
Sum Total				3703.458	3734.827	3966.403	4000.000	31.370	33.597	
Sum Pre-prod				2737.172	0.000	2931.512	0.000	-2737.172	-2931.512	
Net Annual	2965.108701									
Net Total	33.5970166									

Year	Net
-6	
-5	22.26198516
-4	23.84258611
-3	25.53540972
-2	27.34842381
-1	29.29016191
0	31.3697634
1	33.597

Table 10.2

nominal interest 0.071

TABLE 10.2 Establishment Year Costs and Returns for Alfalfa Hay

Cost or Revenue	Description	Units	Quantity	Price/Unit	Months to end of period	Implicit Interest Factor	Value end of period
Alfalfa Hay	July Cutting	ton	1	\$80.00	5	1.029	82.32
Alfalfa Hay	August	ton	1	\$80.00	4	1.023	81.85
Total Revenue							164.17
Seed	Alfalfa	lb	20	2.95	8	1.047	61.76
Inoculant	Alfalfa type	pkg	0.5	2.4	8	1.047	1.26
Fertilizer	N	lb	15	0.25	9	1.053	3.95
	P205	lb	60	0.23	9	1.053	14.53
	K20	lb	190	0.15	9	1.053	30.00
	Boron	lb	2	2.38	9	1.053	5.01
	Lime	ton	3	16	9	1.053	50.53
Weed							
Weed Control	Balan	qt	3	4.13	9	1.053	13.04
	Custom app	acre	1	4	9	1.053	4.21
	2,4-DB	gal	0.63	40.5	8	1.047	26.71
	Custom app	acre	1	4	8	1.047	4.19
Machinery Costs		acre	1	77.34	6	1.035	80.04
Labor		hour	4.37	6	4	1.023	26.83
Total Cost							322.06
Net Return							-\$157.890

TAB 10.3

Table 10.3

		Year	Inflation rate within year	Nominal i within year	Inflation rate between years	Nominal i between years
Real Interest rate	0.04					
Inflation rate in year 1	0.048076923	-6	0.04807692	0.09	0	0.04
Nominal interest rate in year 1	0.09	-5	0.04807692	0.09	0	0.04
Adjustment for Cost	0	-4	0.04807692	0.09	0	0.04
		-3	0.04807692	0.09	0	0.04
		-2	0.04807692	0.09	0	0.04
		-1	0.04807692	0.09	0	0.04
		0	0.04807692	0.09	0	0.04
		1	0.04807692	0.09	0.048076923	0.09

Time	Nominal Cost Expenditure point Year i	Nominal Income end year i	Nominal Cost end year i	Cost adjusted end year	Income adjusted end year	Cost adjusted end year	Income adjusted end year	Net Income adjusted end year	Net Income adjusted end year
				0	0	1	1	0	1
-6									
-5	1895		1895	2305.557	0.000	2513.057	0.000	-2305.557	-2513.057
-4	718		718	839.958	0.000	915.555	0.000	-839.958	-915.555
-3	788		788	886.393	0.000	966.168	0.000	-886.393	-966.168
-2	600		600	648.960	0.000	707.366	0.000	-648.960	-707.366
-1	70		70	72.800	0.000	79.352	0.000	-72.800	-79.352
0	-259		-259	-259.000	0.000	-282.310	0.000	259.000	282.310
1	0	3600	0	0.000	3302.752	0.000	3600.000	3302.752	3600.000
Sum Total				4494.669	3302.752	4899.189	3600.000	-1191.916	-1299.189
Sum Pre-prod				4494.669	0.000	4899.189	0.000	-4494.669	-4899.189
Net Annual	3600								
Net Total	-1299.188696								

Year	Net
-6	
-5	-774.6637707
-4	-844.38351
-3	-920.3780259
-2	-1003.212048
-1	-1093.501133
0	-1191.916235
1	-1299.189

Tab 10.4

TABLE 10.4 Total Cost for 4 Acres of Alfalfa Hay and 1 Year of Alfalfa Establishment

Cost or Revenue	Description	Units	Quantity	Price/Unit	Months to end of period	Implicit Interest Factor	Value at end of period
Alfalfa Hay	May Cutting	ton	3.6	\$80.00	7	1.041	299.757
Alfalfa Hay	June Cutting	ton	5.6	\$80.00	6	1.035	463.631
Alfalfa Hay (estab)	July Cutting	ton	1	\$80.00	5	1.029	82.319
Alfalfa Hay	July Cutting	ton	6	\$80.00	5	1.029	493.916
Alfalfa Hay (estab)	Aug Cutting	ton	1	\$80.00	4	1.023	81.850
Alfalfa Hay	Sep Cutting	ton	3.2	\$80.00	3	1.017	260.428
Production Year Revenue							1517.733
Total Revenue							1681.902
Establishment Costs							
Seed	Alfalfa	lb	20	2.95	8	1.047	61.761
Inoculant	Alfalfa type	pkg	0.5	2.4	8	1.047	1.256
Fertilizer	N	lb	15	0.25	9	1.053	3.948
	P205	lb	60	0.23	9	1.053	14.529
	K20	lb	190	0.15	9	1.053	30.005
	Boron	lb	2	2.38	9	1.053	5.011
	Lime	ton	3	16	9	1.053	50.534
Weed Control	Balan	qt	3	4.13	9	1.053	13.044
	Custom app	acre	1	4	9	1.053	4.211
	2,4-DB	gal	0.63	40.5	8	1.047	26.709
	Custom app	acre	1	4	8	1.047	4.187
Machinery Costs		acre	1	77.34	6	1.035	80.038
Labor		hour	4.37	6	4	1.023	26.826
Land	Rental	acre	0	40	0	1.000	0.000
Total Establishment Costs							322.059
Production Year Costs							
Fertilizer	P205	lb	240	0.23	9	1.053	58.114
	K20	lb	760	0.15	9	1.053	120.018
	Boron	lb	8	2.38	9	1.053	20.045
Insect Control	Furadan 4F	qt	4	17.04	7	1.041	70.943
Weed Control							
Post-Emerge (2 of 4 acres)	Poast plus	gal	0.52	22	6	1.035	11.839
	Crop oil	gal	0.52	8.08	6	1.035	4.348
	Custom app	acre	2	4	6	1.035	8.279
Post-Emerge (2 of 4 acres)	2,4-DB	gal	1.28	40.5	8	1.047	54.266
	Custom app	acre	2	4	8	1.047	8.374
Post-Emerge	Gramoxone extra	pt	4	4.04	10	1.059	17.111
	Surfactant	qt	1	2.71	10	1.059	2.869
	Custom app	acre	4	4	10	1.059	16.941
Hay Preservative	Fresh cut(80% of crop)	lb	96	1.35		1.000	129.600
Twine		bale	800	0.05		1.000	40.000
Labor		hour	27.16	6	4	1.023	166.729
Machinery Fuel		acre	4	11.95		1.000	47.800
Machinery Repairs		acre	4	27.31		1.000	109.240
Machinery & equipment	Depreciation & Interest	acre	4	60.91		1.000	243.640
Land	Rental	acre		40	0	1.000	0.000
Total Production Year Cost							1130.156
Total Cost							1452.216
Production Year Return							1517.733
Production Year (Return - Cost)							387.576
Total Return							1681.902
Total Return -Total Cost							229.687
Production Year Cost/Acre							282.539
Production Year Return/Acre							379.433
Production Year (Return - Cost)/Acre							96.894
Establishment Year Net Return/Acre							39.472
(Total Return -Total Cost)/Acre							57.422

TABLE 10.6 Different Methods of Allocating Heifer Costs in a Dairy Cow Budget (values in \$/cow)

Item	Capital recovery	Market value	Historic value	Current cost
Revenue				
Milk Sales	2,652.04	2,652.04	2,652.04	2,652.04
Cull Sales	0.00	213.22	213.22	213.22
Bull Calf Sales	51.00	51.00	51.00	51.00
Heifer Calf Sales	61.20	61.20	61.20	2.27
Interest on Revenue	113.44	122.37	122.37	119.94
Total Receipts	2,877.68	3,099.83	3,099.83	3,038.47
Operating Costs				
Replacement Cost	0.00	412.54	456.04	0.00
Feed Cost	880.40	880.40	880.40	1,053.22
Other Operating Costs	699.39	699.39	699.39	776.06
Interest on All Operating Costs	65.09	82.08	83.87	75.37
Total Operating Costs	1,644.88	2,074.42	2,119.71	1,904.65
Allocated Overhead				
Labor Costs	522.42	522.42	522.42	602.23
Livestock Investment	247.96	44.89	48.77	60.32
Other Fixed Costs	271.55	271.55	271.55	321.35
Total Allocated Overhead	1,041.93	838.86	842.74	983.90
Total Costs	2,686.80	2,913.28	2,962.44	2,888.55
Net Returns	190.88	186.55	137.38	149.92

ALF Trad

Annual real interest	0.050000
Annual inflation rate	0
Annual nominal interest	0.05
Life in years	4
Original value	157.8895634
Salvage value	
Annual depreciation	39.47239084
	Total
Depreication	39.47239084
OC	4.934048855
Total Cost	44.4064397

Annual real interest	0.040000
Annual inflation rate	0
Annual nominal interest	0.04
Life in years	19

Original value	4494.668528
Salvage value	
Annual depreciation	236.5615015
Total	

Depreication	236.5615015
OC	94.62460059

Total Cost	331.1861021
------------	-------------

4 Year Life

Annual real interest	0.040000
Annual inflation rate	0
Annual nominal interest	0.04
Original life of asset	2100
Salvage life	100
Life in years	4
Annual depreciation	500
Initial price	50
Midyear maintenance	0

Original value	105000
Salvage value	5000

	Total	Per Hour
Depreication	25000	50.000
OC	2700	5.400
Total Cost	27700	55.400

ALF CR

		Year	Inflation	Nominal i	Depr Factor
Annual real interest	0.050000				
Annual inflation rate	0.02	1	0	0.05	0.2000000
Annual nominal interest	0.071	2	0	0.05	0.2000000
Original value of asset	157.8895634	3	0	0.05	0.2000000
Depreciation over time period	157.8895634	4	0	0.05	0.2000000
Salvage value of asset	0	5	0	0.05	0.2000000
Life in years	4				
Depreciation Factor	2				
Annual straightline depreciation in \$	39.47239084				
Annual use	400				

		Per Hour
CSC N	44.52672511	\$44.53 0.111316813
CSC R	44.52672511	\$44.53 0.111316813
CSC M	44.52672511	0.111316813

Item	Beg Value	Direct	OC	Inflation	Interest	Real Depr	Nominal Depr	End Value	Total Cost
Investment	157.8895634		0	7.894478168	0	7.894478	31.57791267	126.311651	7.89447817
Service reduction + Change in market value									31.5779127
Total									39.4723908
CSC N									44.5267251
CSC R									44.5267251
CSC M									44.5267251
Investment	126.3116507		0	6.315582535	0	6.315583	31.57791267	94.733738	6.31558253
Service reduction + Change in market value									31.5779127
Total									37.8934952
CSC N									44.5267251
CSC R									44.5267251
CSC M									44.5267251

ALF CR

Investment	94.73373802	0	4.736686901	0	4.736687	31.57791267	31.57791	63.1558253	4.7366869
Service reduction + Change in market value									31.5779127
Total									36.3145996
CSC N									44.5267251
CSC R									44.5267251
CSC M									44.5267251
Investment	63.15582535	0	3.157791267	0	3.157791	31.57791267	31.57791	31.5779127	3.15779127
Service reduction + Change in market value									31.5779127
Total									34.7357039
CSC N									44.5267251
CSC R									44.5267251
CSC M									44.5267251
Investment	31.57791267	0	1.578895634	0	1.578896	31.57791267	31.57791	7.1054E-15	1.57889563
Service reduction + Change in market value									31.5779127
Total									33.1568083
CSC N									44.5267251
CSC R									44.5267251
CSC M									44.5267251
Total 6 year cost									181.572998
Average cost									45.3932495
USO Real	3.5459505								
USO Nominal	3.37957862								
P.V. of annual costs(1)									165.784042
P.V. of annual costs(0)									157.889563
P.V. of CR N									202.416288
P.V. of CR R									202.416288
P.V. of CR M									202.416288

Alm CR

		Year	Inflation	Nominal i	Depr Factor
Annual real interest	0.040000				
Annual inflation rate	0.05	1	0	0.04	0.2000000
Annual nominal interest	0.092	2	0	0.04	0.2000000
Original value of asset	4494.67	3	0	0.04	0.2000000
Depreciation over time period	4494.67	4	0	0.04	0.2000000
Salvage value of asset	0	5	0	0.04	0.2000000
Life in years	19				
Depreciation Factor	2				
Annual straightline depreciation in \$	236.561579				
Annual use	400				

			Per Hour
CSC N	342.217964	\$342.22	0.8555449
CSC R	342.217964	\$342.22	0.8555449
CSC M	342.217964		0.8555449

Item	Beg Value	Direct	OC	Inflation	Interest	Real Depr	Nominal Depr	End Value	Total Cost
Investment	4494.67		0 179.7868		0 179.7868	898.934	898.934	3595.736	179.7868
Service reduction + Change in market value									898.934
Total									1078.7208
CSC N									342.217964
CSC R									342.217964
CSC M									342.217964
Investment	3595.736		0 143.82944		0 143.82944	898.934	898.934	2696.802	143.82944
Service reduction + Change in market value									898.934
Total									1042.76344
CSC N									342.217964
CSC R									342.217964
CSC M									342.217964
Investment	2696.802		0 107.87208		0 107.87208	898.934	898.934	1797.868	107.87208
Service reduction + Change in market value									898.934
Total									1006.80608
CSC N									342.217964
CSC R									342.217964
CSC M									342.217964
Investment	1797.868		0 71.91472		0 71.91472	898.934	898.934	898.934	71.91472
Service reduction + Change in market value									898.934
Total									970.84872
CSC N									342.217964
CSC R									342.217964
CSC M									342.217964
Investment	898.934		0 35.95736		0 35.95736	898.934	898.934	-6.8212E-13	35.95736
Service reduction + Change in market value									898.934
Total									934.89136
CSC N									342.217964
CSC R									342.217964
CSC M									342.217964

Alm CR

Total 6 year cost		5034.0304
Average cost		264.948968
USO Real	13.13394	
USO Nominal	8.827912	
P.V. of annual costs(1)		4674.4568
P.V. of annual costs(0)		4494.67
P.V. of CR N		1584.43332
P.V. of CR R		1584.43332
P.V. of CR M		1584.43332

CR Dairy

Annual real interest	0.040000	Year	Inflation	Nominal i
Annual inflation rate	0		1	0
Annual nominal interest	0.04		2	0
Original value of asset	1050		3	0
Salvage value of asset	600		4	0
Life in years	3		5	0
Depreciation Factor	2			0.04
Annual straightline depreciation in \$	150			
Annual use	400			
US0	2.77509103			
Adjusted Salvage Value	533.397815			
PVO				
CSC N	186.156843	186.1568426		
CSC R	186.156843	186.1568426		
CSC M	186.156843			
Factor	0.36034854			
SV*r	24			
PPC-SV	450			
CSC R	186.156843			

Depr
Factor
0.2000000
0.2000000
0.2000000
0.2000000
0.2000000

Table 10.6o

TABLE 10.6 Effect of Different Methods of Allocating Heifer Costs in a Dairy C

Method	Current cost	Market value	Historic value	Capital recovery
Milk Sales (@ \$12.80/cwt)	\$2,690	\$2,690	\$2,690	\$2,690
Cull Sales (@ \$47/cwt)	216	216	216	0
Total Receipts	2,906	2,906	2,906	2,690
Feed Cost	1,200	1,000	1,000	1,000
Replacement Cost	0	378	396	186
Other Variable Costs	580	472	472	472
Fixed Costs	800	728	728	728
Total Costs	2,580	2,578	2,596	2,386
Net Returns	\$326	\$328	\$310	\$304

Low Budget (values in \$/cow)

RN TEST

0.05

0.045

0.09725