

Positive Impacts

Increased Incomes	
Increased Milk Production	\$58,212
Increased Milk Premiums	\$1,317
Increased Cull Cow Sales	-\$1,080
Software Value to Herd Production	\$5,040
Total Increased Incomes	\$63,489

Decreased Expenses	
Reduced Heat Detection Labor	\$2,190
Reduced Milking Labor	\$32,850
Reduced Labor Management	\$3,942
Total Decreased Expenses	\$38,982

Total Positive Impacts \$102,471

Annual Value to Quality of Life = \$9,000

Negative Impacts

Increased Expenses	
Capital Recovery Cost of Robots (Dep & Int)	\$60,200
Increased Repair and Insurance Costs	\$16,000
Increased Feed Costs	\$22,270
Increased Cow Replacement Costs	-\$2,304
Increased Utilities and Supplies	\$972
Increased Records Management	\$3,942
Total Increased Expenses	\$101,080

Decreased Incomes Expected	
Total Decreased Incomes	\$0

Total Negative Impacts \$101,080

NET ANNUAL FINANCIAL IMPACT = \$1,391

with Annual Value of Quality of Life = \$10,391

Herd and Financial Assumptions

	Units	Instructions or Reference Values
Herd Size -- both milking and dry	144 no. of cows	Typical herd size of 66-74 cows/robot
Mailbox Milk Price	\$17.50 \$ per cwt.	Typical range \$13.00 - \$20.00 / cwt
Estimated Cost per Robot -- include robot housing	\$220,000 \$ per robot	Typical range of \$185,000 - \$230,000
Estimated Annual Change in Milking System Repair	\$7,000 \$ per robot	Typical range from \$5,000 - \$9,000/robot
Number of Robots Needed	2 no. robots	Typical range of 55-65 milking cows/robot
Years of Useful Life	10 years	Typical range is 7 - 15 years
Value per Robot after Useful Life	\$40,000 \$ per robot	Typical range of 10-30% of purchase price
Interest Rate of Money	5.50 % interest rate	Value of own or borrowed money
Insurance Rate per \$1,000 Value	0.50 %	Typical rate is 0.5% per 1,000 investment
Increased Insurance Value of Robot vs. Current	\$400,000 \$ per farm	Value of robot(s) over current system

Labor Changes

Current Hours of Milking Labor with setup&cleanup	9 hours per day	Range of 2 to 5 hours/day per 70 cows
Anticipated Hours of Milking Labor	3 hours per day	Range of 1 to 1.75 hours/day per 70 cows
Current Hours of Heat Detection	0.65 hours per day	Typical is 0.25 - .75 hours
Anticipated Hours of Heat Detection	0.25 hours per day	Typical is 0 - 0.5 hours
Labor Rate for Milking and Heat Detection	\$15.00 \$ per hour	Typical rate is \$10 - \$18 with benefits
Increased Hours for Records Management	0.6 hours per day	Include AMS management records
Reduced Hours for Labor Management	0.6 hours per day	Include hiring, training, overseeing, etc.
Labor Rate for Records and Labor Management	\$18.00 \$ per hour	Typical rate of \$12 - \$25

Milk Production, Herd Health, Reproduction and Milk Quality Changes

Lbs of Milk per Cow per Day, Past Year	70 lbs/cow/day	Typical range of 50 - 90 lbs
Projected Change in Milk Production	7 lbs/cow/day	Typical 5-15% more if 2x; 0-10% less if 3x
SCC Premium per 1,000 SCC Change	\$0.003 \$ per cwt	Typically \$0.002 - \$0.004/cwt
Current Annual Bulk Tank Average SCC	240,000 SCC per ml	Typical range of 100,000 - 400,000 SCC
Estimated Percent Change in SCC	-5.0 %	Typical range of -10 to +2%
Reproduction and Herd Health Value of Software	\$35.00 \$ per cow/year	Estimated range of \$20 - \$60 per cow/yr

Feed Costs and Intake Changes

Lbs of TMR Dry Matter (DM) per lb of Milk	0.65 lb DM/lb Milk	Typical range of 0.55 - 0.8
Cost per lb of TMR Dry Matter	\$0.125 \$ per lb DM	Typical range of \$0.8 - \$0.15
Estimated Change in cost/lb Dry Matter	-\$0.002 \$ per lb DM	Typical range of -\$0.005 to +\$0.005

Culling and Herd Replacement Changes

Cost of Replacement Heifer	\$1,600 \$ per heifer	Typical range of \$1,300 - \$2,200
Cull Price per Cow (or sold for milking purposes)	\$750 \$ per cow	Typical range of \$350 - \$1,200
Expected Change in Annual Turnover Rate	-1 %	Typical change has been very small

Utilities and Supply Changes for Milking

Anticipated Change in Electricity cost	\$8.25 \$/cow/year	Typical increase of 0 - 150 kWh
Anticipated Change in Water cost	-\$3.00 \$/cow/year	Typical range of -\$5 to +\$5
Anticipated Change in Chemicals Cost	\$1.50 \$/cow/year	Typical range of -\$2 to +\$2

The authors have used their best judgement and shall not be liable for any use of this software decision-making aid.

AMS Loan Amortization for

2 Robots

7	Years of Loan	Annual Interest	Principal Amount
12	Annual Payment(s)	Rate	\$400,000
84	Total Payments	5.50%	

First Month	Interest	Prinicpal	Total Payment
Payment	\$1,833	\$3,915	\$5,748

First Year	Interest	Prinicpal	Total Payment
Payment	\$22,000	\$46,976	\$68,976

Net Cash Flow Analysis of AMS

	Totals
Net Annual Financial Impact from Partial Budget Analysis	\$1,391
Capital Recovery Cost of Robots	\$60,200
Annual Payment on Robot Investment	\$68,976
Cash Flow Difference of Capital Recovery vs Annual Payment	-\$8,776
Cash Flow Adjustment for Unpaid Labor and Management	
Heat Detection & Milking Labor Saved	\$35,040
Amount Hired	\$20,000
	-\$15,040
Labor & Records Mgt Changes	\$0
Amount Hired	\$0
	\$0
Total Change in AMS Cash Flow	-\$22,425

Increase Value by 10 Percent	\$ Change
Herd Size	\$3,661
Milk Price	\$5,498
Cost per AMS	-\$6,510
Change in Repair Cost	-\$1,060
Years of Life	\$3,091
Resale Value of AMS	\$800
Interest Rate	-\$2,310
Insurance Rate/\$1,000 Value	-\$175
Increased Insurance Value	-\$175
Current Hours of Milking Labor	\$3,559
Anticipated Hours of Milking Labor	-\$821
Current Hours of Heat Detection	\$274
Rate for Milking/Heat Detection	\$3,012
Increased Hours Records Mgt	-\$182
Reduced Hours Labor Mgt	\$365
Rate for Records/Labor Mgt	\$183
Current Bulk Tank Average	\$327
Projected Change in Milk Production	\$3,324
SCC Premium/1,000 SCC Change	\$128
Current Bulk Tank SCC	\$128
Estimated Percent Change in SCC*	\$128
Lbs TMR Dry Matter/lb of Milk	-\$1,976
Cost/lb of TMR Dry Matter	-\$2,207
Change in cost/lb TMR Dry Matter*	\$232
Cost of Replacement Heifer	\$224
Cull Price per Cow	-\$119
Change in Annual Turnover Rate*	\$105
Change in Electricity cost	-\$115
Change in Water cost*	\$42
Change in Chemicals Cost	-\$21

Robotic Milking Survey

ISUEO Dairy Team

Annual Value to Quality of Life =

Notes:

Name:

Brand:

Address

Phone:

Herd and Financial Assumptions

	Units	Instructions or Reference Values
Herd Size	no. cows	Enter herd size, lactating and dry
Milk Price	\$ per cwt milk	Typical range \$13.00 - \$19.00 / cwt
Estimated Cost per Robot	\$ per robot	Include building cost for housing robots
Estimated Annual Change in Milking System Repair	\$ per farm	Typical range from \$5,000 - \$9,000/robot
Number of Robots Needed	no. robots	Typical range of 55-65 milking cows/robot
Years of Useful Life Anticipated	years	Typical range is 7 -15 years
Value per Robot after Useful Life	\$ per robot	Typical range of 20-30% of purchase price
Interest Rate of Money	% interest rate	Value of own or borrowed money
Insurance Rate per \$1,000 Value	%	Typical rate is 0.5% per 1,000 investment
Increased Insurance Value of Robot vs. Before	\$ per farm	Value of robot(s) over current system

Labor Changes

Hours of Milking Labor Before Robot	hours per day	Include set-up and cleanup
Hours of Milking Labor After Robot	hours per day	Include fetching cows and cleanup
Hours of Heat Detection Before Robot	hours per day	Typical is 0.25 - .75 hours
Hours of Heat Detection After Robot	hours per day	Typical is 0 - 0.5 hours
Labor Rate for Milking and Heat Detection	\$ per hour	Typical rate is \$10 - \$18 with benefits
Increased Hours for Records Management	hours per day	Include AMS management records
Reduced Hours for Labor Management	hours per day	Include hiring, training, overseeing, etc.
Labor Rate for Records and Labor Management	\$ per hour	Typical rate of \$12 - \$25

Milk Production and Quality Changes

Lbs of Milk per Cow per Day, Before Robot	lbs/cow/day	Typical range of 50 - 90 lbs
Change in Milk Production, After Robot	lbs/cow/day	Typical 3-15% more 2x; 0-9% less 3x
SCC Premium per 1,000 SCC Change	\$ per cwt	Typically \$0.002 - \$0.004/cwt
Annual Bulk Tank Average SCC Before Robot	SCC per ml	Typical range of 100,000 - 400,000 SCC
Estimated Percent Change in SCC After Robot	%	Typical range of -35 to +2%
Reproduction and Herd Health Value of Software	\$ per cow/year	Estimated range of \$20-\$60 per cow/year

Feed Costs and Intake Changes

Lbs of TMR Dry Matter (DM) per lb of Milk, Before Robot	lb DM/lb Milk	Typical range of 0.55 - 0.8
Lbs of TMR Dry Matter (DM) per lb of Milk, After Robot	lb DM/lb Milk	Typical range of 0.55 - 0. added in by LT 5-12
Cost per lb of TMR Dry Matter, Before Robot	\$ per lb DM	Typical range of \$0.8 - \$0.14 in 2011
Estimated Change in cost/lb Dry Matter, After Robot	\$ per lb DM	Typical range of -\$0.003 to +\$0.003

Culling and Herd Replacement Changes

Cost of Replacement Heifer	\$ per heifer	Typical range of \$1,300 - \$2,200
Cull Price per Cow (or sold for milking purposes)	\$ per cow	Typical range of \$350 - \$1,200
Change in Annual Turnover Rate, After Robot	%	Typical change has been very small

Utilities and Supply Changes for Milking

Anticipated Change in Electricity cost, After Robot	\$/cow/year	Typical increase of 0 - 150 kWh
Anticipated Change in Water Cost, After Robot	\$/cow/year	Typical range of -\$5 to +\$5
Anticipated Change in Chemicals Cost, After Robot	\$/cow/year	Typical range of -\$2 to +\$2

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