UW-Dairy Management

Dairy Management

Dairy Management site is designed to support dairy farming decision-making focusing on model-based scientific research. The ultimate goal is to provide user-friendly computerized decision support systems to help dairy farms improve their economic performance. Dr. Victor Cabrera focuses on model-based decision support in dairy cattle and in dairy farm production systems. Dr. Cabrera's primary interest is to improve cost-efficiency and profitability along with environmental stewardship in dairy farms by using simulation techniques, artificial intelligence, and expert systems. Dr. Cabrera's research and Extension programs involve interdisciplinary and participatory approaches towards the creation of user-friendly decision support systems. As an Extension Specialist, Dr. Cabrera works in close relationships with county-based Extension faculty, dairy producers, consultants, and related industry.

Latest Projects

- Dairy Cow Fertility
- Strategies of Pasture Supplementation
- Success for Small Dairy Farmers
- LGM-Dairy
- Dairy Economic Decision Support System

UW

- University of Wisconsin - Madison
- UW - Cooperative Extension
- UW - Dairy Science
- Understanding Dairy Markets
- UW Dairy Nutrient
- UW Center for Dairy Profitability

Dairy News

- UW-Extension Dairy News

Contact

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Professional Page

Victor E. Cabrera, Ph.D.

TOOLS

Dairy Management Tools

Click to find out more about tools provided by DairyMGT

READ MORE

Projects

Home | Tools | Projects | Publications | Presentations | LGM-Dairy | Links

Funded | Pending

Active Projects

A series of research and extension projects under development by the University of Wisconsin Dairy Science Department, Dairy Management program.

Click on the Project to learn more.

Funded Dairy Management Projects under Progress

- An Integrated Approach to Improving Dairy Cow Fertility

Title	**An Integrated Approach to Improving Dairy Cow Fertility**
Team	**Cabrera, V.E., Fricke, P., Ruegg, P., Shaver, R., Weigel, M., Wiltbank, M.**
Term	**48 months January 2010 - January 2014**
Amount	**$1,000,000**
Sponsor	**Integrated Solutions for Animal Agriculture Agriculture Food and Research Initiative National Institute of Food and Agriculture**

USDA United States Department of Agriculture National Institute of Food and Agriculture

This is an Extension-Research Integrated project addressing FY 2009 NIFA-AFRI Integrated Solutions for Animal Agriculture priorities of: (1) Improving Fertility in Agricultural Animals and (2) Preventing and Controlling On-Farm Disease. Our overall objective is to improve the reproductive efficiency of dairy cattle using an interdisciplinary team approach that will identify and remove barriers to reproductive success by linking outcomes of basic and applied research with an innovative producer responsive extension program. (More)

- Strategies of Pasture Supplementation on Organic and Conventional Grazing Dairies: Assessment of Economic, Production and Environmental Outcomes
- Success for Small Beginning Dairy Farmers
- Assessment of Gross Margin Insurance under Alternative Biofuels and Predicted Climatic Conditions: Implications for Wisconsin Dairy Farms
- Development of a Dairy Economic Decision Support System for Wisconsin
- Integrated Analysis of Diverse Dairy Systems in Mexico and Wisconsin: Building Capacity for Multi-disciplinary Appraisal of Sustainability

Publications

Publications

A collection of publications related to dairy management, economic decision-making, and risk management. It includes more research-based publications such as peer-reviewed journal articles, book chapters, and scientific presentations; and more extension-based publications such as extension reports, magazines, and press releases.

Click on the type of publication and specific links to learn more.

Journal Articles

2010

Valvekar, M., **Cabrera, V.E.,** Gould, B.W. 2010. Identifying optimal strategies for guaranteeing target dairy income over feed cost. Journal of Dairy Science 93:3350-3357.

Cabrera, V.E. 2010. A large Markovian linear program for replacement policies to optimize dairy herd net income for diets and nitrogen excretion. Journal of Dairy Science 93:394-406.

Cabrera, V.E., Solis, D., del Corral, J. 2010. Determinants of Technical Efficiency among Dairy Farms in Wisconsin. Journal of Dairy Science 93:387-393.

Inostroza, J.F., Shaver, R.D., **Cabrera, V.E.**, and Tricarico, J.M. 2010. Effect of diets containing a controlled-release urea product on milk yield, composition and component yields in commercial Wisconsin dairy herds and economic implications. Professional Animal Scientist 26:175-180.

2009

Cabrera, V.E., Stavast, L.J., Baker, T.T., Wood, M.K., Cram, D.S., Flynn, R.P., and Ulery, A.L. 2009. Soil and runoff response to dairy manure application on rangeland. Agriculture, Ecology, and Environment 131:255-262

Cabrera, V.E., Solis, D., Letson, D. 2009. Optimal crop insurance under climate variability: contrasting insurer and farmer interests. Transactions of the ASABE 52, 623-631

AitSahlia, F., Wang, C., **Cabrera, V.E.**, Uryasev, S., Fraisse, C.W. 2009. Optimal crop planting schedules and financial hedging strategies. Annals of Operations Research DOI: 10.1007/s10479-009-0551-2

Liu, J., Men, C., Men, C., **Cabrera, V.E.**, Uryasev, S., Fraisse, C.W. 2009. Optimizing crop insurance under climate variability. Journal of Applied Meteorology and Climatology DOI: 10.1175/2007JAMC1490.1

2008

Cabrera, V.E., Hagevoort, R., Solis, D., Kirksey, R., Diemer, J.A. 2008. Economic Impact of Milk Production in the State of New Mexico. Journal of Dairy Science 91:2144-2150.

Cabrera, V.E., Mathis, C.P., Kirksey, R.E., Baker, T.T. 2008. Development of a seasonal prediction model for manure excretion by dairy cattle. The Professional Animal Scientist 24:175-183

Cabrera, V.E., Breuer, N.E., Hildebrand, P.E. 2008. Participatory modeling in dairy farm systems: a method for building consensual environmental sustainability using seasonal climate forecasts. Climatic Change 89, 395-409

Presentations

Presentations

A collection of presentations related to dairy management.

Click to learn more.

2010 Presentations

Cabrera, V.E., Shraver, R., Dyk, P., Salfer, J., Tranel, L., Endress, J. 4-State Dairy Extension Feed Cost Evaluator. Farm Management Update for Ag Professionals. (Download)

Cabrera, V.E., Gould, B.W. Least Cost Premium for LGM-Dairy. Farm Management Update for Ag Professionals. Kimberly, WI. April 2010. (Download)

Cabrera, V.E. Evaluación Económica de Semen Sexado para Vaquillonas. Mercolactea. Argentina, May 2010. (Download)

Cabrera, V.E. Herramientas para Decisiones de Manejo en Ganado Lechero: Sistema de Internet de la Universidad de Wisconsin . Mercolactea. Argentina, May 2010. (Download)

Cabrera, V.E. Decisiones de Reemplazo en Tambos Lecheros. Mercolactea. Argentina, May 2010. (Download)

Cabrera, V.E. Análisis Económico de Frecuencias de Ordeño. Argentina, May 2010. (Download)

Cabrera, V.E. Decisiones Optimas de Ingresos Sobre los Costos de Alimentación. Argentina, May 2010. (Download)

Cabrera, V.E. Herramientas de Gestión Web. Chile, April 2010.

Cabrera, V.E. Estrategias para la Suplementación en Lecherías de Pastizales. Mexico, March 2010. (Download)

Cabrera, V.E., Janowski, J. A Computer Based Tool for Evaluating Dairy Expansion & Production. Annie's Project Tomah Meeting, March 17, 2010. (Download)

Cabrera, V.E. Economic Decision Making in Dairy Farming. Dairy Troubleshooting Class, March 16, 2010. (Download)

Cabrera, V.E., Giordano, J. Economics of Dairy Reproductive Programs. Johnson Crek Peer Group Meeting, March 11, 2010. (Download)

Cabrera, V.E., Vanderlin, J. Wisconsin Dairy Ratio Benchmarking Tool. Heart of the Farm, March 5, 2010. (Download)

Cabrera, V.E. Income Over Feed Cost for Wisconsin Dairy Farms. Sauk County Dairy Optimists, February 11, 2010. (Download)

Cabrera, V.E. Economic analysis of switching milking frequency. Ohio Dairy Health and Management Certificate Program, Module #5 – Dairy Cattle Economics, February 4-5, 2010. (Download)

Cabrera, V.E. Optimizing income over feed supplement cost. Ohio Dairy Health and Management Certificate Program, Module #5 – Dairy Cattle Economics, February 4-5, 2010. (Download)

Cabrera, V.E. Value of Sexed Semen. Ohio Dairy Health and Management Certificate Program, Module #5 – Dairy Cattle Economics, February 4-5, 2010. (Download)

Cabrera, V.E. Economics of Sexed Semen. Cow College 2010, Clintonville, 12 January 2010. (Download)

Cabrera, V.E., Fricke, P., Ruegg, P., Shaver, R., Weigel, K, Wiltbank, M. Successful NIFA/AFRI Grant(s) What it takes to be Successful. ANRE UW-Extension Meeting. Madison, 8 January 2010. (Download)

Tools

Home | Tools | Projects | Publications | Presentations | LGM-Dairy | Links

Feeding | Heifers | Reproduction | Production | Replacement | Financial | Environment | Price Risk

Management Tools

A collection of state-of-the-art dairy management tool that are: user-friendly, interactive, robust, visually attractive, and self contained. All these tools have clear or self-explanatory instructions and technical support available.

Click on the Tool title to learn more.

Feeding

- Optigen® Evaluator
- Income Over Feed Supplement Cost
- The 4-State Dairy Extension Feed Cost Evaluator
- Corn Feeding Strategies
- Dairy Ration Feed Additive Break-Even Analysis

Heifers

- Cost-Benefit of Accelerated Liquid Feeding Program for Dairy Calves
- Economic Value of Sexed Semen Programs for Dairy Heifers
- Heifer Replacement
- Heifer Break-Even

Reproduction

- Economic Value of Sexed Semen Programs for Dairy Heifers
- UW-DairyRepro$: A Reproductive Economic Analysis Tool

- Exploring Timing of Pregnancy Impact on Income Over Feed Cost

Production

- Decision Support System Program for Dairy Production and Expansion
- Economic Analysis of Switching from 2X to 3X Milking
- Lactation Benchmark Curves for Wisconsin
- Economic Evaluation of using rbST
- Alfalfa Yield Predictor: Using a Computer Application to Predict Irrigated Alfalfa Yield

Tools : IOFSC

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Feeding

- Optigen® Evaluator
- Income Over Feed Supplement Cost

Maximizes the income over feed supplement cost (IOFSC) for a fixed amount of forage used in the diet and graphs the IOFSC to a substitution of two selected feed supplements

Excel SpreadSheet (Open)
Online (Open)
Instructions (Download)
Documentation (Download)
Demo (Click to View the Video)

Tools : IOFSC : Video

Income Over Feed Supplement Cost

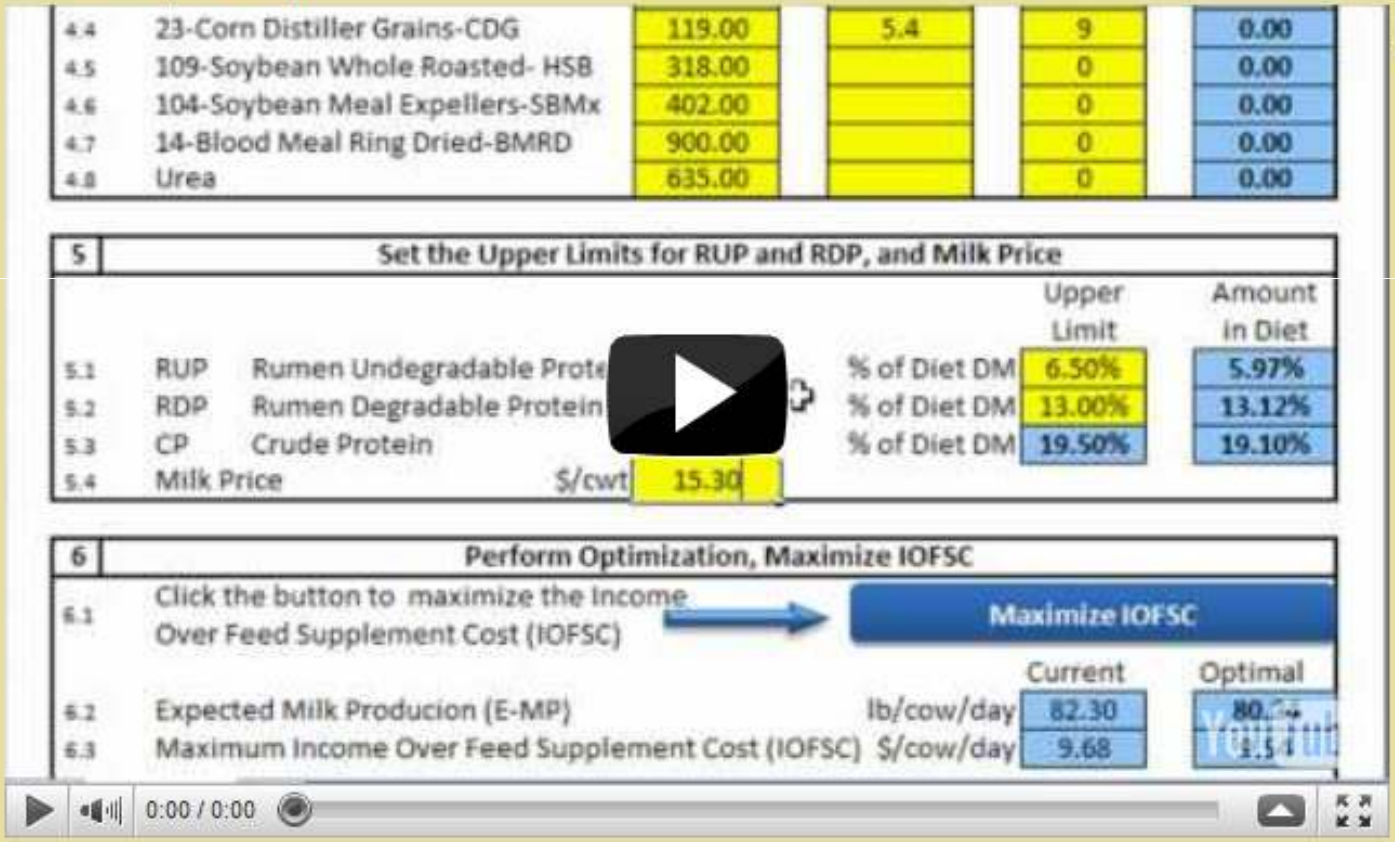
Maximizes the income over feed supplement cost (IOFSC) for a fixed amount of forage used in the diet and graphs the IOFSC to a substitution of two selected feed supplements

Excel SpreadSheet (Open)

Online (Open)

Instructions (Download)

Documentation (Download)



Tools : IOFSC : Online

Income over Feed Supplement Cost

Dr. Victor E. Cabrera

English | Metric | Documentation | Instructions

I

Calculate Dry Matter Intake

1.	Milk Production	110	lb/cow/day
2.	Body Weight	1380	lb/cow
3.	Days in Milk	180	day
4.	Dry Matter Intake	67.53	lb/cow/day

II

Set the Sources and Proportion of Forage in the Diet

Proportion of Forage in diet 50 %

35-Corn Silage-CoSi 100 % of Forage Edit Row

Crude Protien in Diet Provided by Forage 2.97 lb/cow/day

Add Row

Tools : IOFSC : Spreadsheet

Income Over Feed Supplement Cost (IOFSC)®

V.E. **Cabrera**, R.D. **Shaver**, and M.A. **Wattiaux**

Overwrite **yellow** cells and make appropriate selections.
Click on **blue button** to optimize IOFSC: results appear in **blue** cells. Click on **red button** to substitute between feed supplements; results appear in **figures** and **table.**

Units: ○ Metric ◉ **English**

1 Calculate Dry Matter Intake (DMI)

1.1	Milk Producion (MP)	lb/cow/day	80		
1.2	Body Weight (BW)	lb/cow	1400		
1.3	Days in Milk (DIM)	day	100		100
1.4	Dry Matter Intake (DMI)			lb/cow/day	**53.66**

2 Set the Sources and Proportion of Forage in the Diet

2.1	Proportion of Forage in Diet	% of Diet	50%	26.829656
2.2	35-Corn Silage-CoSi	% of Forage	50%	
2.3	83-Alf. Silage-AlSi	% of Forage	50%	
2.4	35-Corn Silage-CoSi [Edit]	% of Forage	0%	
2.4	Crude Protein in Diet Provided by Forage		lb/cow/day	**4.12**

3 Set Source of Energy Supplements and Prices

		Price ($/bu)	Current Diet (lb)	Upper Limit (lb)	Optimal (lb)
3.1	27-Corn-CGG	3.54	20.88	25	**17.62**
3.2	8-Barley-BGR	4.8		0	**0.00**
3.3	116-Wheat-WGR	7.4		0	**0.00**

4 Set the Source of Protein, Byproduct Supplements and Prices

		Price ($/ton)	Current Diet (lb)	Upper Limit (lb)	Optimal (lb)
4.1	106-Soybean Meal-SBM	300.00	5.95	25	**4.21**
4.2	25-Corn Gluten Meal-CGM	550.00		0	**0.00**
4.3	24-Corn Gluten Feed-CGF	160.00		0	**0.00**
4.4	23-Corn Distiller Grains-CDG	140.00		5	**5.00**
4.5	109-Soybean Whole Roasted- HSB	318.00		0	**0.00**
4.6	104-Soybean Meal Expellers-SBMx	402.00		0	**0.00**
4.7	14-Blood Meal Ring Dried-BMRD	900.00		0	**0.00**
4.8	Urea	635.00		0	**0.00**

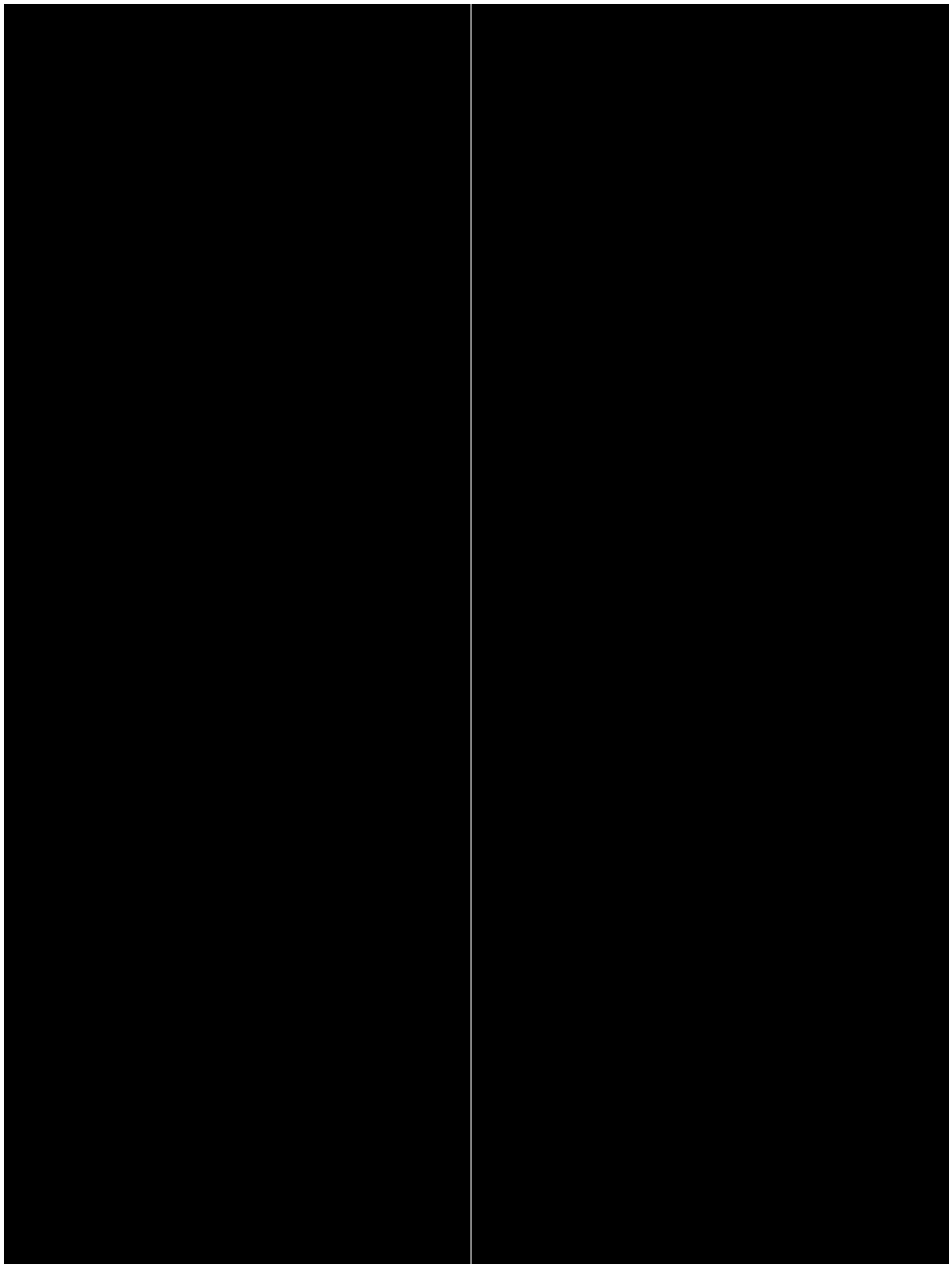
5 Set the Upper Limits for RUP and RDP, and Milk Price

					Upper Limit	Amount in Diet
5.1	RUP	Rumen Undegradable Protein		% of Diet DM	6.50%	**5.93%**
5.2	RDP	Rumen Degradable Protein		% of Diet DM	11.50%	**11.50%**
5.3	CP	Crude Protein		% of Diet DM	**18.00%**	**17.44%**
5.4	Milk Price		$/cwt	9.4		

6 Perform Optimization, Maximize IOFSC

6.1 Click the button to maximize the Income Over Feed Supplement Cost (IOFSC) → **Maximize IOFSC**

Heifer Break-Even



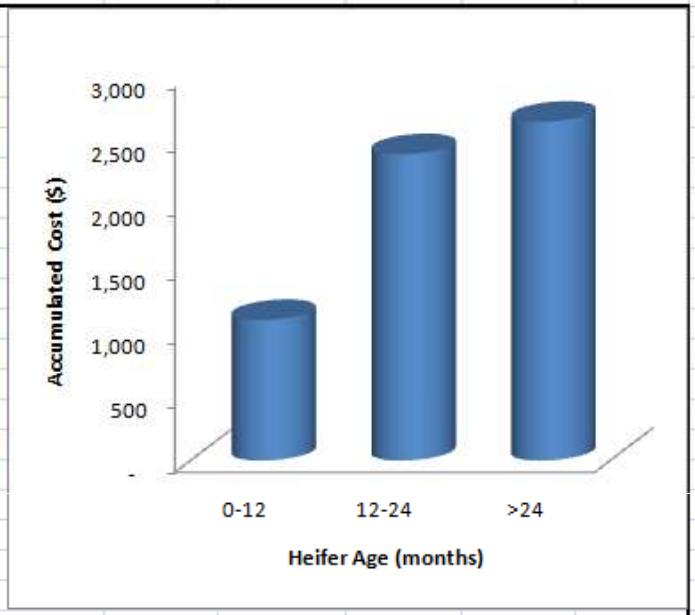
Heifer Break-Even

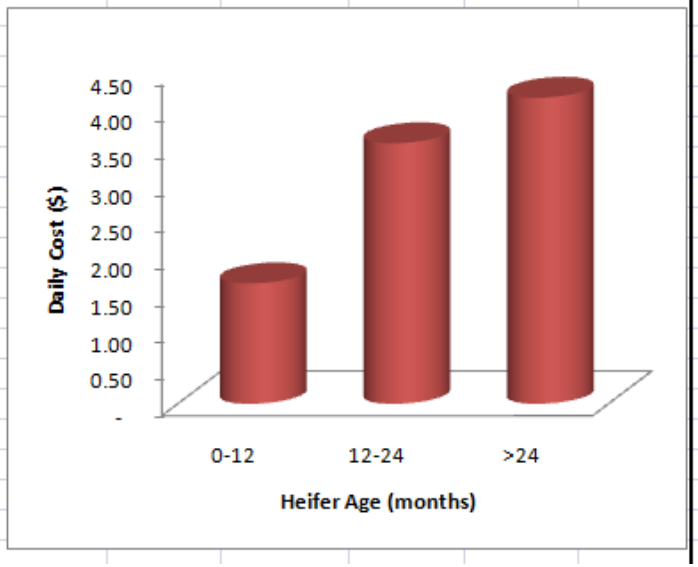
UW Extension

Heifer Breakeven

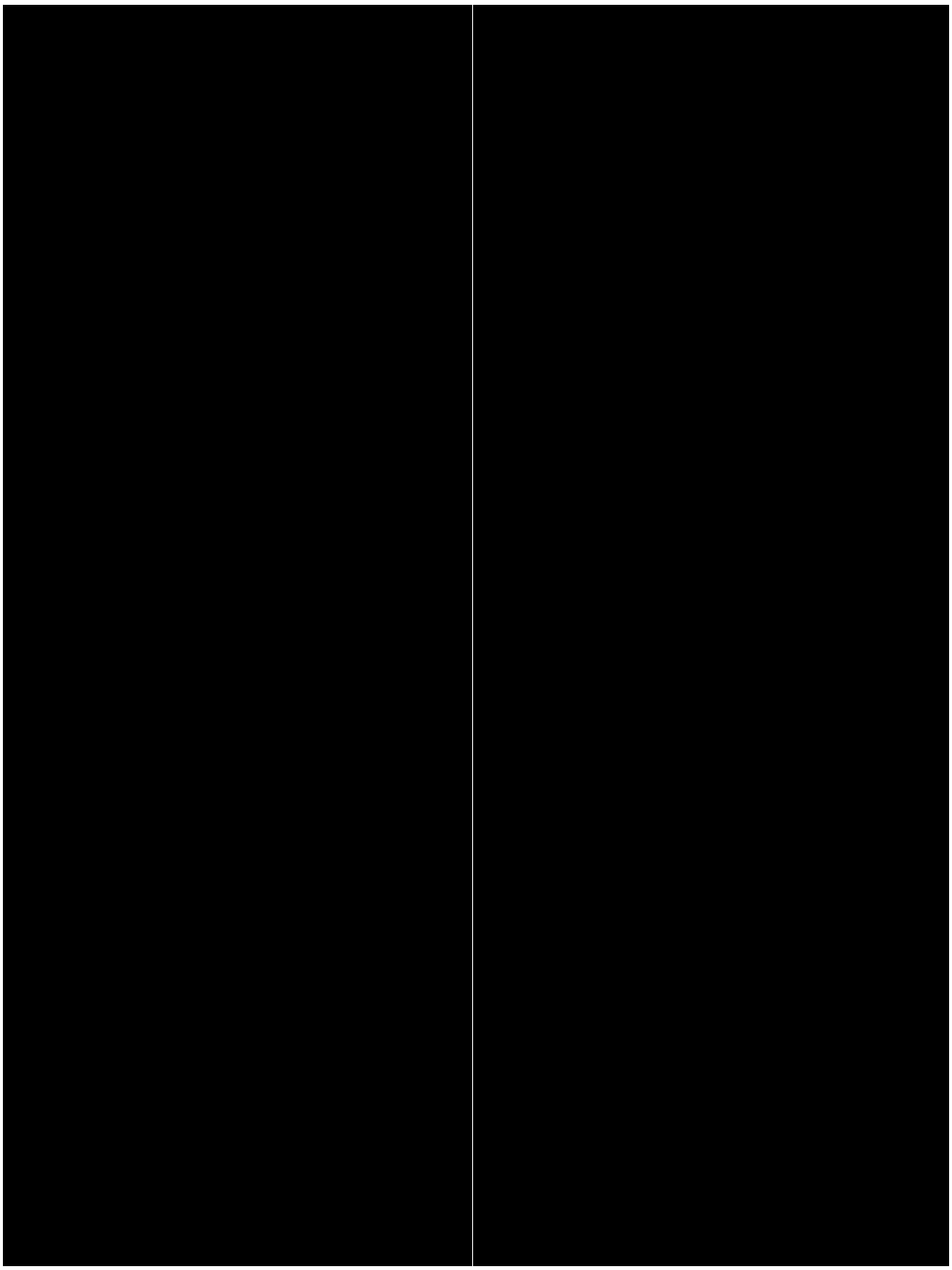
9/13/2010

			Price ($)
1	Input Costs		
1.1	Forage Price (ton)		200
1.2	Corn (bu)		7
1.3	Soybean Meal (lb)		0.1875
1.4	Months to Freshen	26	
2	Heifer Raising Cost 0-12 Months	Amount	Cost ($)
2.1	Forage Price (ton)	1.95	390
2.2	Corn (bu)	14.5	102
2.3	Soybean Meal (lb)	190	36
2.4	Other Feed Supplements ($)		25
2.5	Other Livestock Costs ($)		46
2.6	Total Feed & Livestock Costs ($)		598
2.7	Value at Born ($)		500
2.8	Total Costs ($)		1,098
2.9	Cost per day ($)		1.64
3	Heifer Raising Cost 12-24 Month:	Amount	Cost ($)
2.1	Forage Price (ton)	5.5	1,100
2.2	Corn (bu)	4	28
2.3	Soybean Meal (lb)	50	9
2.4	Other Feed Supplements ($)		10
2.5	Other Livestock Costs ($)		147
2.6	Total Feed & Livestock Costs ($)		1,294
2.7	Cost at 12 months ($)		1,098
2.8	Total Costs ($)		2,392
2.9	Cost per day ($)		3.55
4	Heifer Raising Cost >24 Months	Amount	Cost ($)
2.1	Forage (tons)	0.55	110
2.2	Corn (bu)	0	-
2.3	Soybean Meal (lb)	0	-
2.4	Other Feed Supplements ($)		2
2.5	Other Livestock Costs ($)		15
2.6	Total Feed & Livestock Costs ($)		253
2.7	Costs at 24 months ($)		2,392
2.8	Total Costs ($) at 26 Months		2,646
2.9	Cost per day ($)		4.16





Heifer Replacement



Heifer Replacement

UW Extension

Heifer Replacement

9/13/2010

Herd Size	(# Adult Cow)	100
Calf-Heifer Culling Rate	(%/year)	14%
Average Age to Fresh	(month)	26
Adult Cow Culling Rate	(%/year)	30%
Required Replacement Animals	(# Animals)	93

Cow Culling Rate

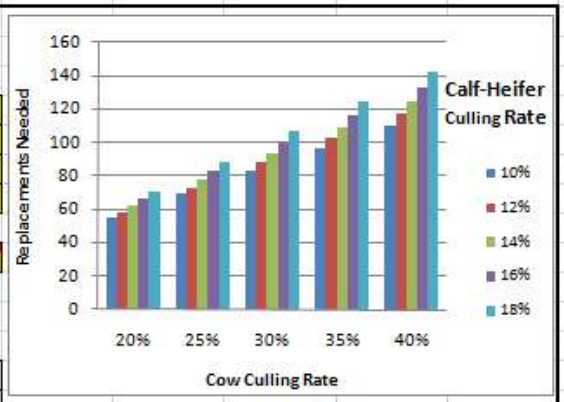
		20%	25%	30%	35%	40%
Calf-Heifer Culling Rate	10%	55	69	83	97	111
	12%	59	73	88	102	117
	14%	62	78	93	109	124
	16%	66	83	99	116	133
	18%	71	89	107	124	142

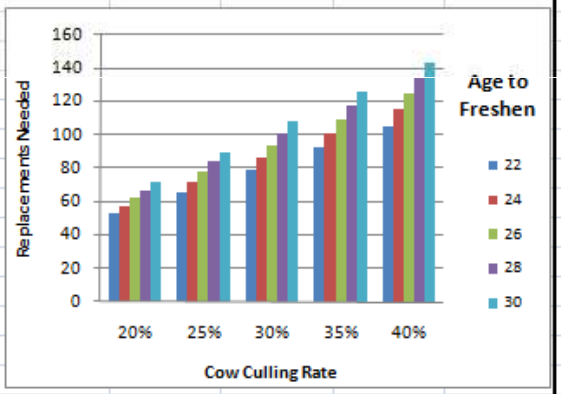
Herd Culling Rate

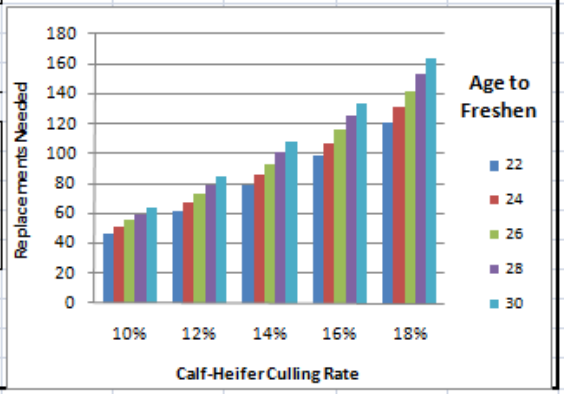
		20%	25%	30%	35%	40%
Age to First Freshen (month)	22	53	66	79	92	105
	24	57	72	86	100	115
	26	62	78	93	109	124
	28	67	84	100	117	134
	30	72	90	108	126	144

Calf-Heifer Culling Rate

		10%	12%	14%	16%	18%
Age to First Freshen (month)	22	47	62	79	98	120
	24	51	68	86	107	131
	26	55	73	93	116	142
	28	60	79	100	125	153
	30	64	84	108	134	164







Sexed Semen

Economic Value of Sexed Semen Programs for Dairy Heifers

Victor E. Cabrera, vcabrera@wisc.edu, 608-265-8506

1. Conception Rates (CR)

1.a. Conventional Semen CR (%)

Low CR	34
Average CR	56
High CR	83

1.b. Sexed Semen CR (% of Conventional CR)

80

Instructions

Manage Scenarios

Print

DairyMGT Webpage

2. Expected Females

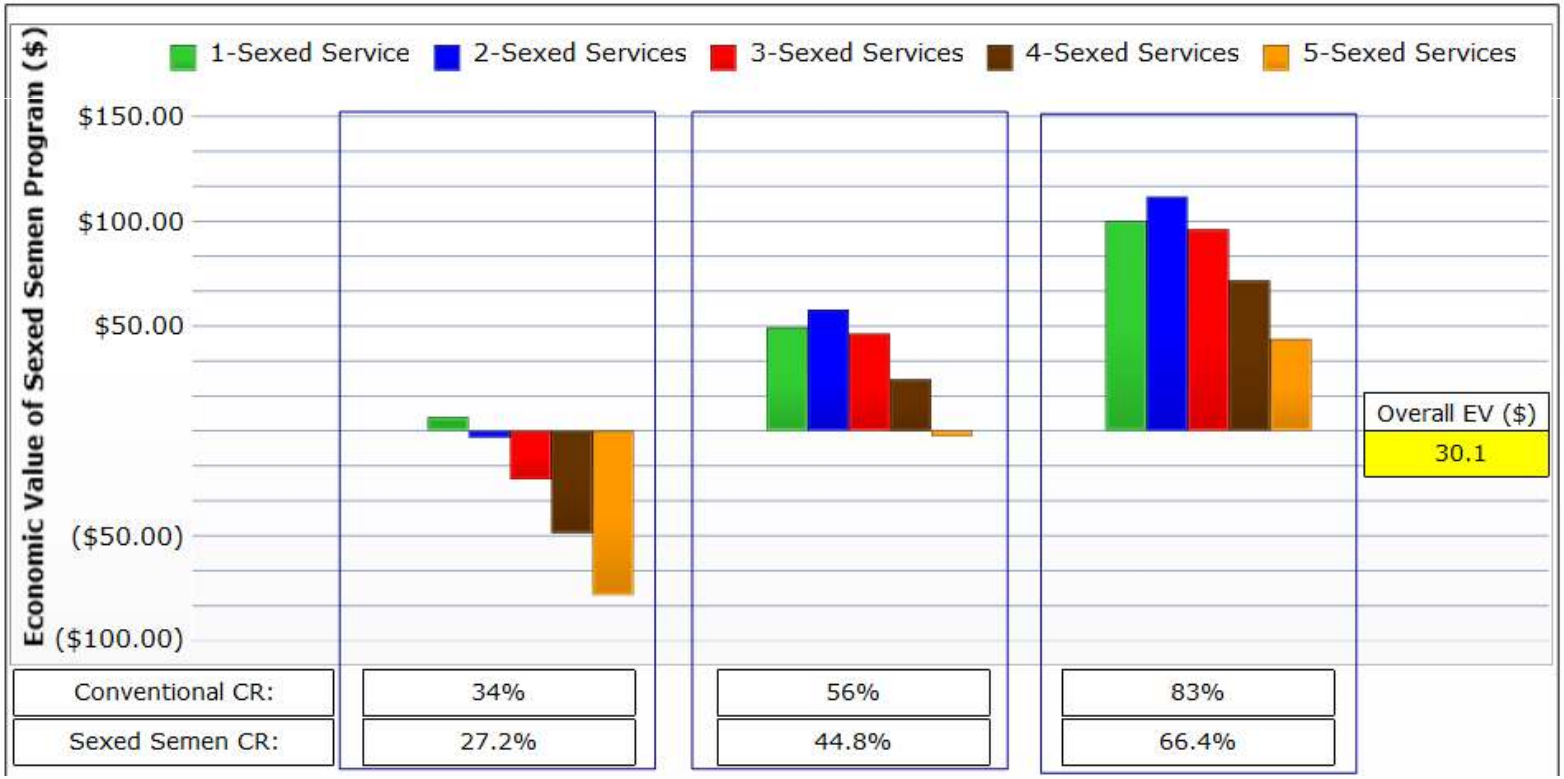
Conventional	46.7
Sexed	89

3. Semen Cost ($)

Conventional	15
Sexed	45

4. Other Economic Parameters

Discount (%/yr)	12
Female Calf ($)	562
Male Calf ($)	48
Raising Cost ($/d)	2.4
Salvage Value ($/cwt)	81.3
Dystocia Cost ($/heifer)	28.53
20-mo Pregnant Heifer ($)	1200



Conventional CR:	34%	56%	83%
Sexed Semen CR:	27.2%	44.8%	66.4%

Time of Pregnancy

Exploring Pregnancy Timing Impact on Income Over Feed Cost

V.E. Cabrera

Milk $/lb	Feed $/lb	Dry Period d	Gestation d	Total IOFC	Time d	IOFC $/d
0.15	0.1	60	280	$838.87	1020	$0.8224

Suggested Parameters for Lactation Curves by RHA

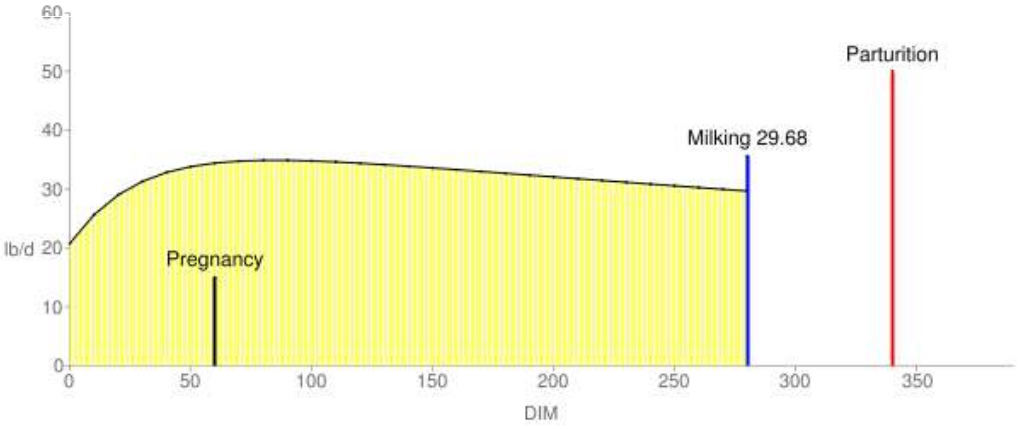
RHA 24,000 Substitute

Optimized Values

Pregnancy Lactation 1 (d)	Pregnancy Lactation 2 (d)	Pregnancy Lactation 3 (d)	Maximum IOFC ($/d)
62	64	67	0.8227

Maximize IOFC

Lactation I



Lactation Curve Parameters

		Suggested Parameters
Pregnancy	60	
Scale	39.0834	86.09
Ramp	30.3456	30.3456
Offset	-1.015	-1.015
Decay	0.000979	0.000979

IOFC($) 150.631

Total Milk (lb) 9019

Lactation II

Lactation Curve Parameters