



CONGRESO
esgal
2013

Impacto Económico de la Reproducción en los Hatos Lecheros

Victor E. Cabrera

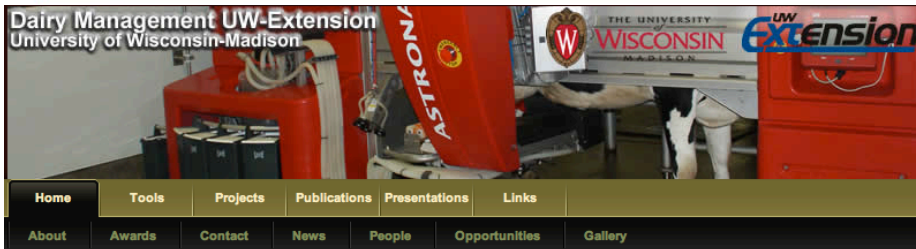


WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON



LW
Extension
University of Wisconsin-Extension

DairyMGT.info



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.

Opportunities

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Latest Projects

- [Genomic Selection and Herd Management](#)
- [Dairy Reproduction Decision Support Tools](#)
- [Strategies of Pasture Supplementation](#)
- [Improving Dairy Cow Fertility](#)
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→ [Repro Money Program](#)

Contact



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Victor E. Cabrera, Ph.D.

Admin Portal

Click Above to reach the Administrator Portal.



UW-Dairy Management
Decision Support TOOLS

Tweets

Follow @vecabrera

Victor E. Cabrera
@vecabrera 30 Jun
Nice program for the 2014 International Cow Fertility Conference, Westport, Ireland. [fb.me/2hu6pvrQf](#)

Victor E. Cabrera
@vecabrera 27 Jun
[fb.me/20nA7B1Bk](#)

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Feeding

- 🔍 [FeedVal 2012](#)
- 🔍 [Grouping Strategies for Feeding Lactating Dairy Cattle](#)
- 🔍 [Optigen® Evaluator](#)
- 🔍 [Income Over Feed Supplement Cost](#)
- 🔍 [Dairy Extension Feed Cost Evaluator](#)
- 🔍 [Corn Feeding Strategies](#)
- 🔍 [Income Over Feed Cost](#)
- 🔍 [Dairy Ration Feed Additive Break-Even Analysis](#)

Heifers

- 🔍 [Heifer Pregnancy Rate](#)
- 🔍 [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

- 🔍 [UW-DairyRepro\\$Plus: A Reproductive Analysis Tool that Includes Heat Detection Devices](#)
- 🔍 [The Economic Value of a Dairy Cow](#)
- 🔍 [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](#)
- 🔍 [Dairy Reproductive Economic Analysis](#)
- 🔍 [Heifer Pregnancy Rate](#)

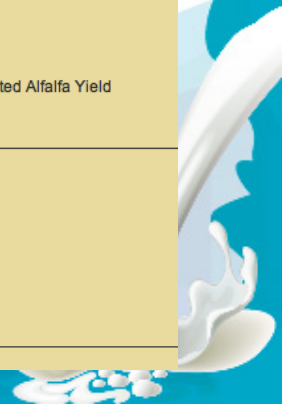
Production

- 🔍 [Milk Curve Fitter](#)
- 🔍 [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](#)

Replacement

- 🔍 [The Economic Value of a Dairy Cow](#)
- 🔍 [Value of a Springer](#)
- 🔍 [Heifer Replacement](#)
- 🔍 [Heifer Break-Even](#)
- 🔍 [Herd Structure Simulation](#)

Financial



Sistema de Toma de Decisiones

Realice sus propios cálculos

Valor vaca es predio específico

Cada predio es diferente



Condiciones prediales cambian dinámicamente

Valor vaca y ingreso neto por vaca cambian



Aplicaciones amigables con el usuario

Fácil de usar, sólidas

Condiciones de mercado cambian permanentemente
Impactan las decisiones



Preñez vs. Dinero

Vacas Descarte

Hormonas

Semen

Labor y servicios

Leche

Crías

Costos

Ingresos



Preñez vs. Dinero

Vacas descarte

Hormonas

Semen

Labor



Leche

Crías

Costos

Ingresos



Que sucede?

Productores

No saben el valor real
de mejorar la
reproducción

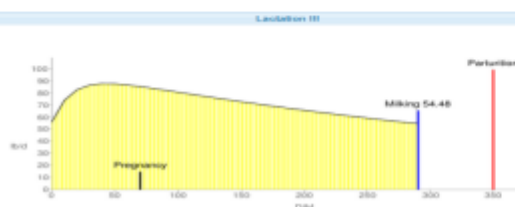
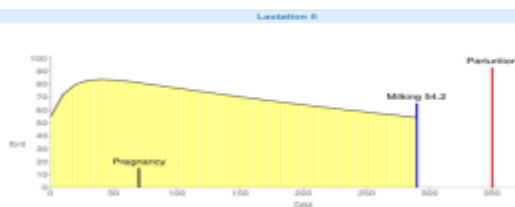
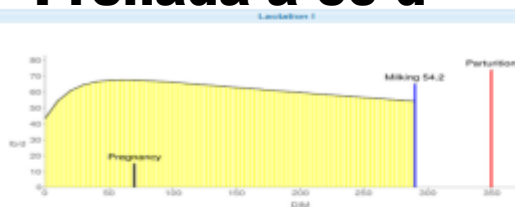
- Command : BREDSUM\E

Date	Ht Elig	Heat	Pct	Pg Elig	Preg	Pct	Aborts
9/23/02	74	36	49	74	10	14	1
10/14/02	64	34	53	64	12	19	0
11/04/02	58	40	69	55	15	27	3
11/25/02	54	23	43	53	10	19	3
12/16/02	50	29	58	49	10	20	2
1/06/03	44	15	34	44	8	18	0
				46	6	13	0
				62	8	13	2
				13	13	19	0
				9	9	15	0
				0	16	16	3
				12	12	1	1
				19	19	1	1
				18	18	3	3
				12	12	0	0
				9	9	2	2
				0	0	0	0
				0	0	0	0
Total				16	21		



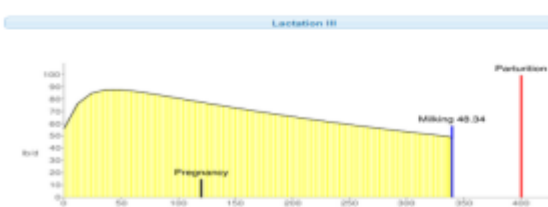
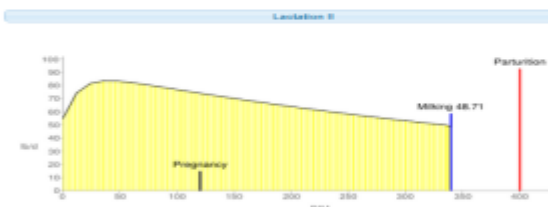
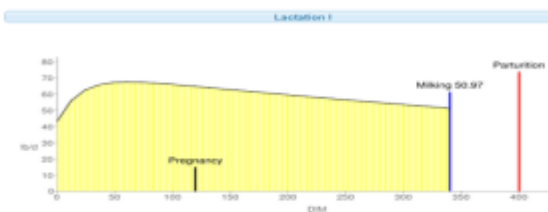
Productividad

Preñada a 60 d



9,320 L/cow/yr

Preñada a 120 d



9,230 L/cow/yr

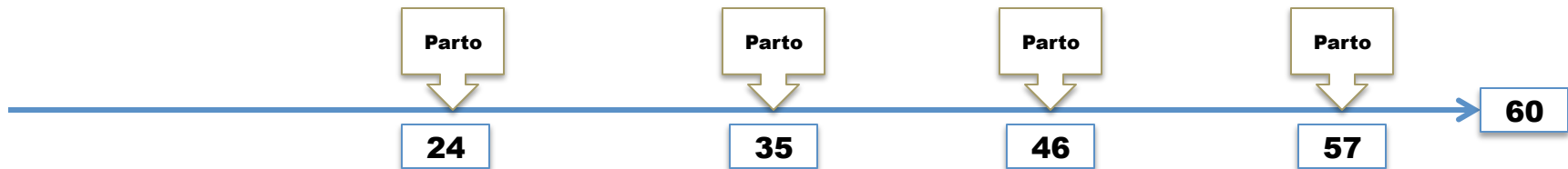
**60 d menos =
↑ 90 L/cow/yr**

DairyMGT.info/Pregnancy



Partos

→ Número de nacimientos

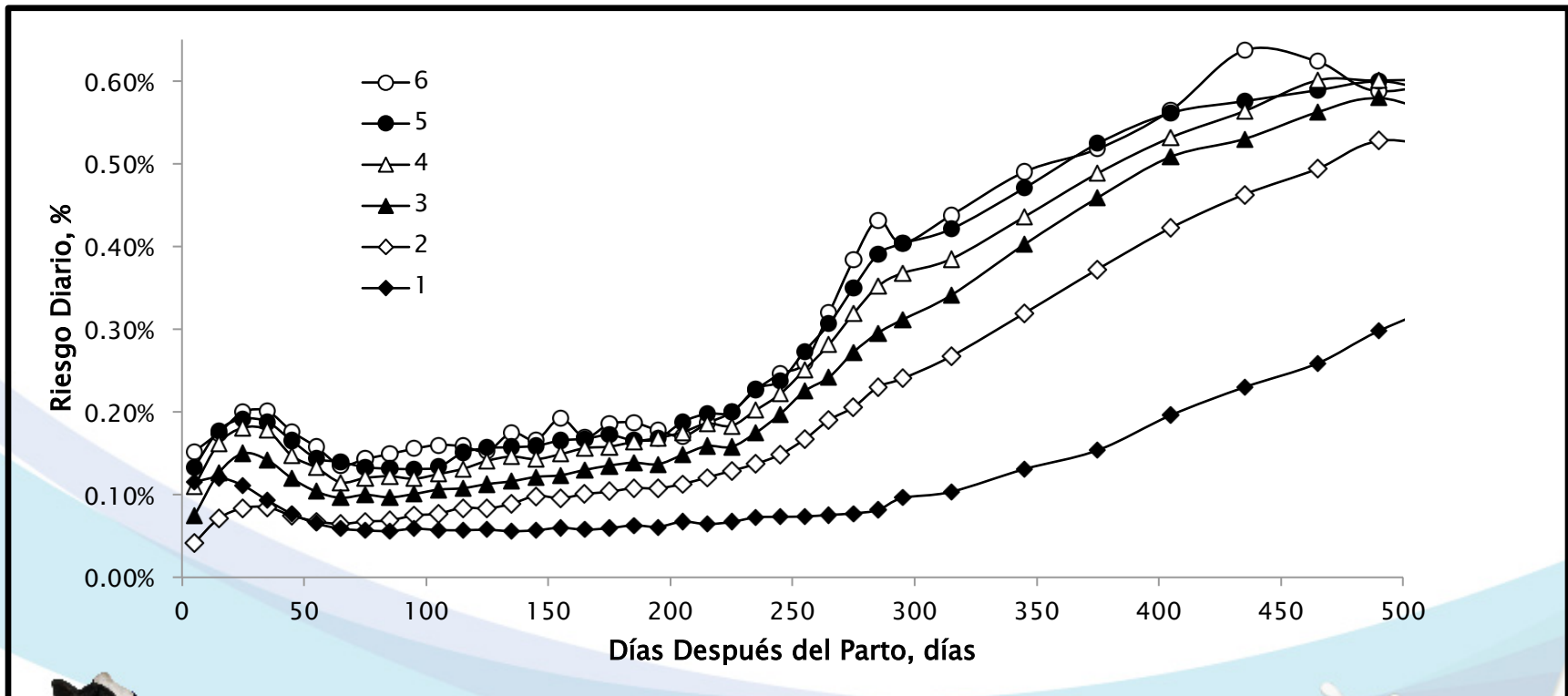


Por Ejemplo: 1 cría mas por vaca en 60 meses de vida adulta

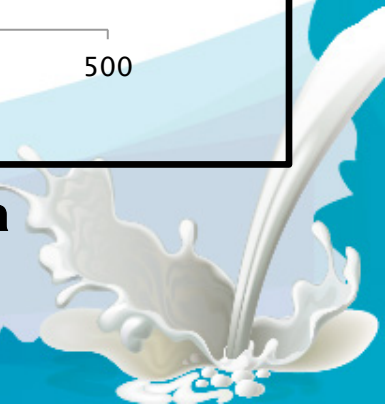


Desecho

→ Descarte involuntario

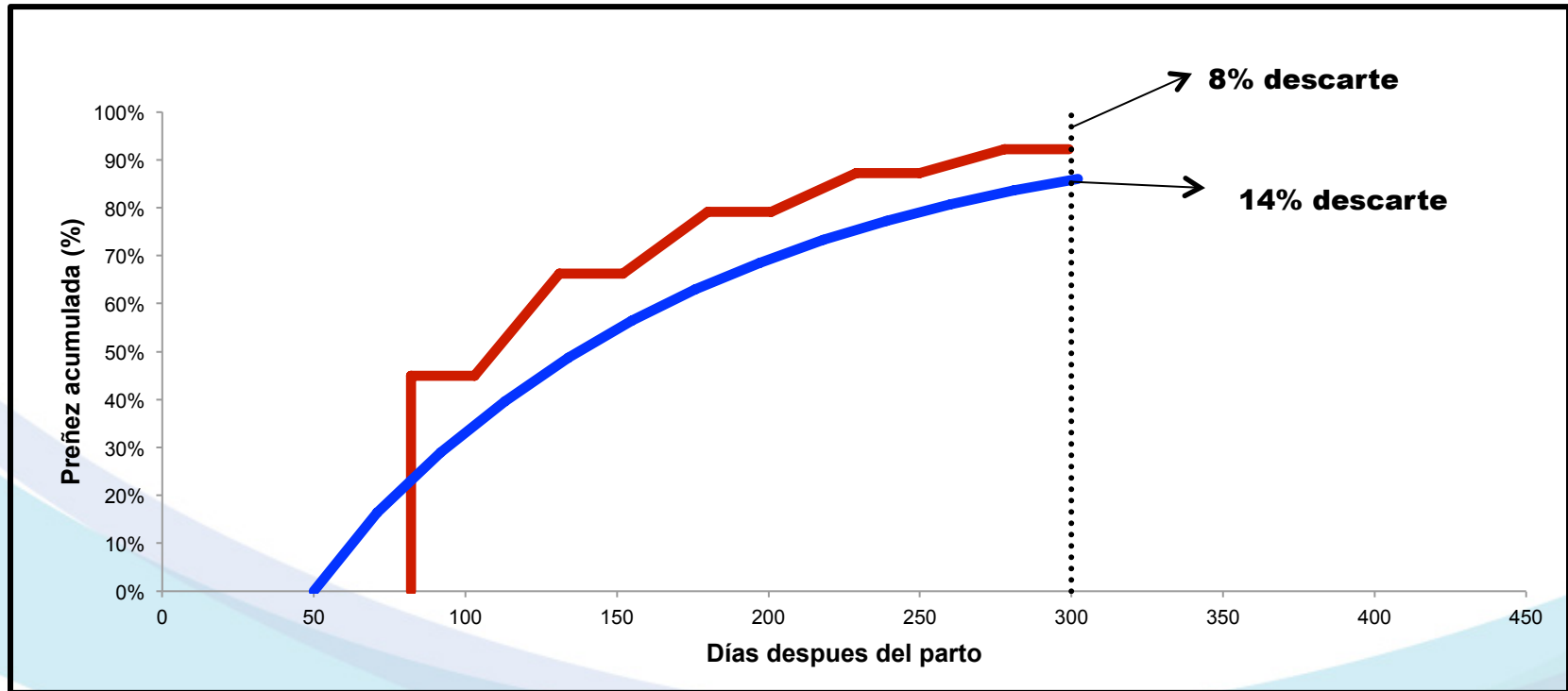


Por ejemplo: ↑ descarte tarde en la lactancia



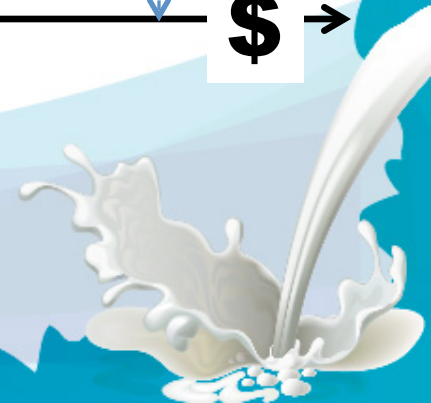
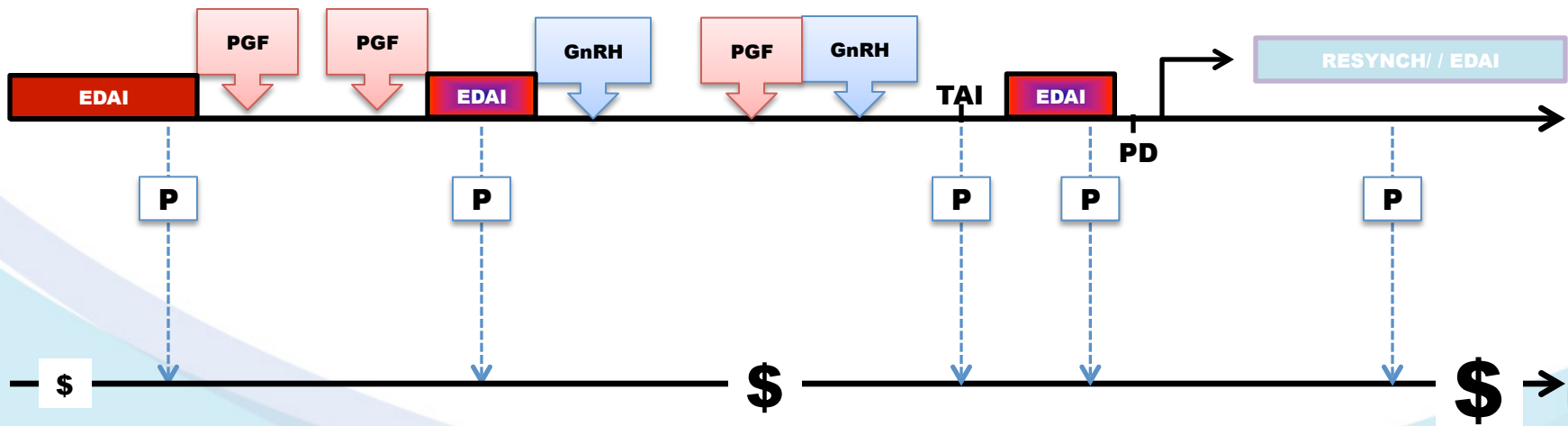
Desecho

→ Descarte voluntario



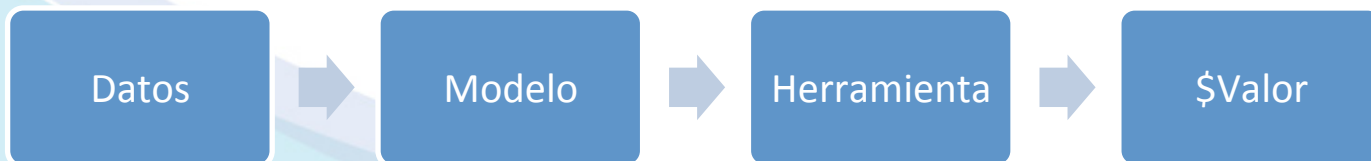
Manejo

→ Costos de reproducción



Objetivo

Desarrollar **Herramientas de Apoyo para la Toma de Decisiones** para evaluar el **Valor Económico** de los **Programas de Manejo Reproductivo** en un predio lechero.



Una Herramienta de Decisión



Dairy Reproductive Economic Analysis



United States
Department of
Agriculture

National Institute
of Food and
Agriculture

UW
Extension



THE UNIVERSITY
of
WISCONSIN
MADISON

V.E. Cabrera

Overview Upload Repro Abort Cull Milk Economics Run Model Results Analyze

This is a Markov-chain model that simulates a dairy herd and their replacements for nine lactations: from the moment of the first calving to the ninth parturition. The model follows monthly probabilistic events of aging, culling, mortality, becoming pregnant, having an abortion, calving, and starting a next lactation. A defined lactation curve determines the milk production depending on lactation number, month in milk, and reproductive status. Cows being culled and dying are replaced the next month, so the herd population remains constant. The model performs a number of iterations until the herd population reaches a "steady state." Steady state of the herd population occurs when the proportion of cows in each specific state (lactation, month in milk, reproductive status) do not change from one iteration (month) to the next.

The model uses pre-defined (or user-defined) probabilities of reproduction, abortion, culling, and mortality to simulate a proportion of cows from one state to the next. For instance, a nonpregnant cow could become pregnant, be culled, or die and a pregnant cow could abort, be culled, die, or calve at the end of gestation. These events occur monthly for each cow in the herd. The value of a reproductive program is then calculated every month for each cow in the herd as the sum of five factors: milk income over feed cost (IOFC), culling cost, mortality cost, income from newborns (calves), and cost of the reproductive program:

Value of Reproductive Program = Income Over Feed Cost + Culling Cost + Mortality Cost + Income from Newborn + Reproductive Program Cost

Once the herd population reaches steady state, the value of the studied reproductive program is calculated as the sum product of the value of the reproductive program in each cow state times the proportion of cows in each state. Different reproductive programs yield different herd structures and consequently different economic values.

Following the tabs in this application you can define a reproductive program, edit the expected probabilities of abortion, culling, and mortality, and define other managerial and economic parameters. An option to download and manipulate these values in a spreadsheet format and then to upload it is also available.

Once you have defined the input parameters you could run the model. The results will be displayed as a "snapshot" of the expected herd at "steady state" and the monthly and total value of the reproductive program based on the five parameters defined above.

DairyMGT.info



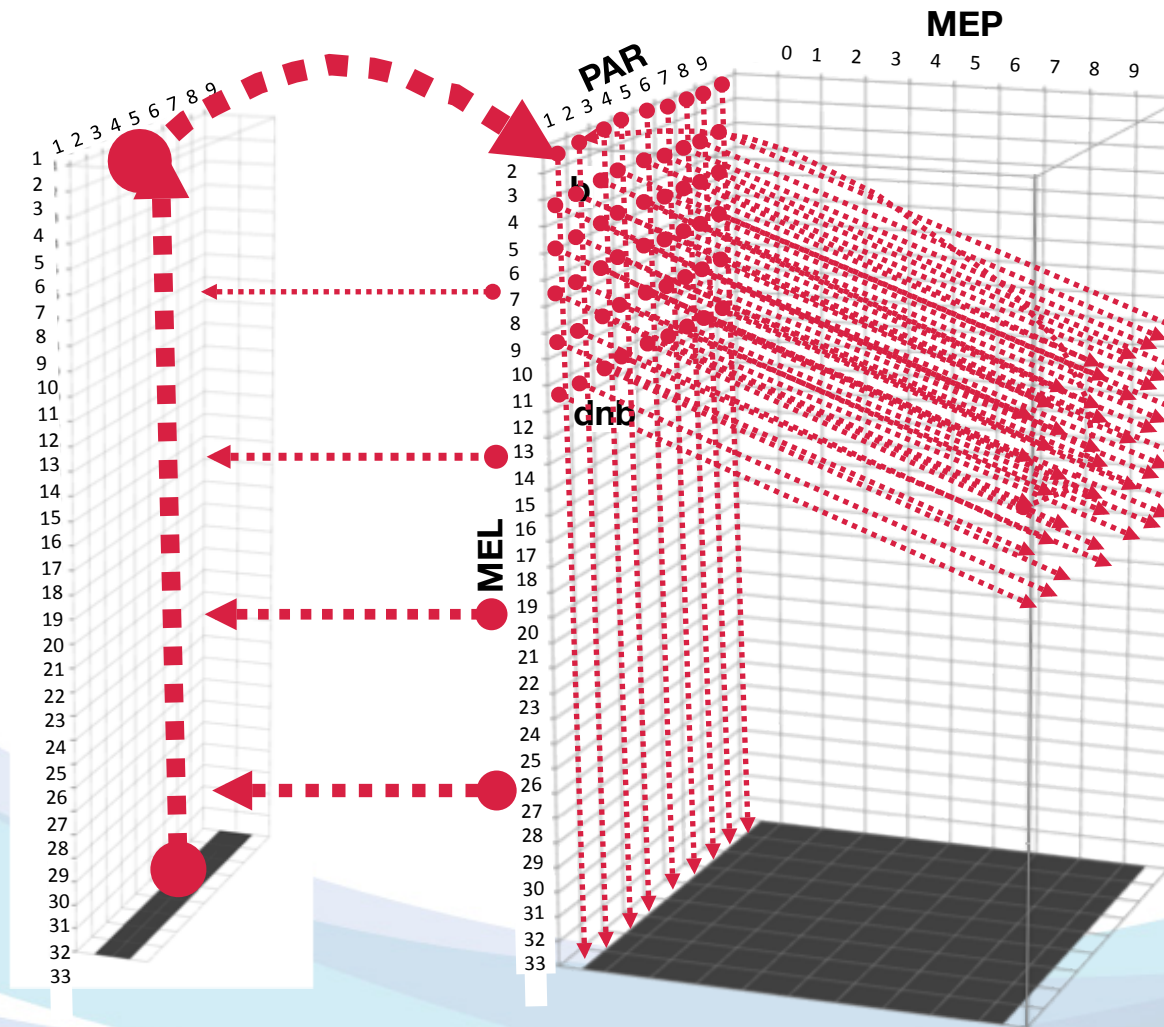
Tools



Reproduction

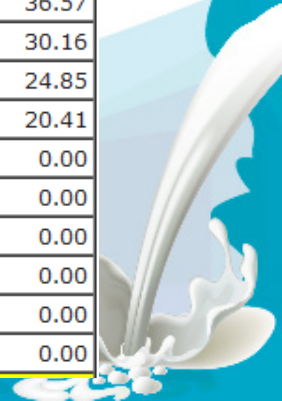


Análisis económico reproductivo



Herramienta de Decisión

Month in Milk	Month in Pregnancy										Cull Cows	Revenues & Costs (\$)			
	0	1	2	3	4	5	6	7	8	9		IOFC	Cull	Repro	Calves
	Lactation 1														
1	3.54										0.14	422.47	-69.93	0.00	0.00
2	3.39										0.09	489.30	-45.44	84.80	0.00
3	2.70	0.59									0.06	466.27	-27.96	67.62	0.00
4	2.17	0.48	0.59								0.05	438.04	-24.08	54.34	0.00
5	1.77	0.38	0.47	0.57							0.04	410.78	-20.87	44.17	0.00
6	1.45	0.31	0.38	0.46	0.55						0.04	385.40	-19.18	36.26	0.00
7	1.20	0.26	0.31	0.37	0.44	0.54					0.04	358.39	-18.42	29.94	0.00
8	0.99	0.21	0.25	0.30	0.35	0.43	0.53				0.04	330.60	-17.73	24.73	0.00
9	0.82	0.17	0.21	0.24	0.29	0.35	0.43	0.53			0.04	302.77	-17.76	20.42	0.00
10	0.67	0.14	0.17	0.20	0.24	0.28	0.34	0.42	0.52		0.04	190.20	-18.69	16.84	0.00
11	0.55	0.12	0.14	0.17	0.20	0.23	0.28	0.34	0.42	0.52	0.58	102.51	-20.39	13.84	103.04
12	0.01		0.12	0.14	0.16	0.19	0.23	0.28	0.34	0.41	0.03	29.79	-8.72	0.00	82.79
13	0.01			0.11	0.13	0.16	0.19	0.23	0.27	0.33	0.03	13.03	-6.91	0.00	66.52
14	0.01				0.11	0.13	0.16	0.19	0.22	0.27	0.02	0.47	-5.37	0.00	54.08
15	0.00					0.11	0.13	0.15	0.19	0.22	0.01	-8.44	-4.10	0.00	44.37
16	0.00						0.11	0.13	0.15	0.18	0.01	-14.17	-3.05	0.00	36.57
17	0.00							0.10	0.13	0.15	0.00	-17.51	-2.18	0.00	30.16
18	0.00								0.10	0.12	0.00	-19.11	-1.41	0.00	24.85
19	0.00									0.10	0.00	-8.57	-0.68	0.00	20.41
20											0.00	0.00	0.00	0.00	0.00
21											0.00	0.00	0.00	0.00	0.00
22											0.00	0.00	0.00	0.00	0.00
23											0.00	0.00	0.00	0.00	0.00
24											0.00	0.00	0.00	0.00	0.00
25											0.00	0.00	0.00	0.00	0.00

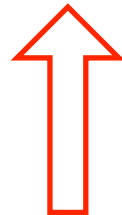


Herramienta de Decisión

Overview Upload **Repro** Abort Cull Milk Economics Run Model Results Analyze

Find the economic value of improving reproductive performance

	21-d Preg Risk (%)	Repro Cost (\$/cow/mo)
Current Repro Program	18	25
Goal Repro Program	21	25



Analyze

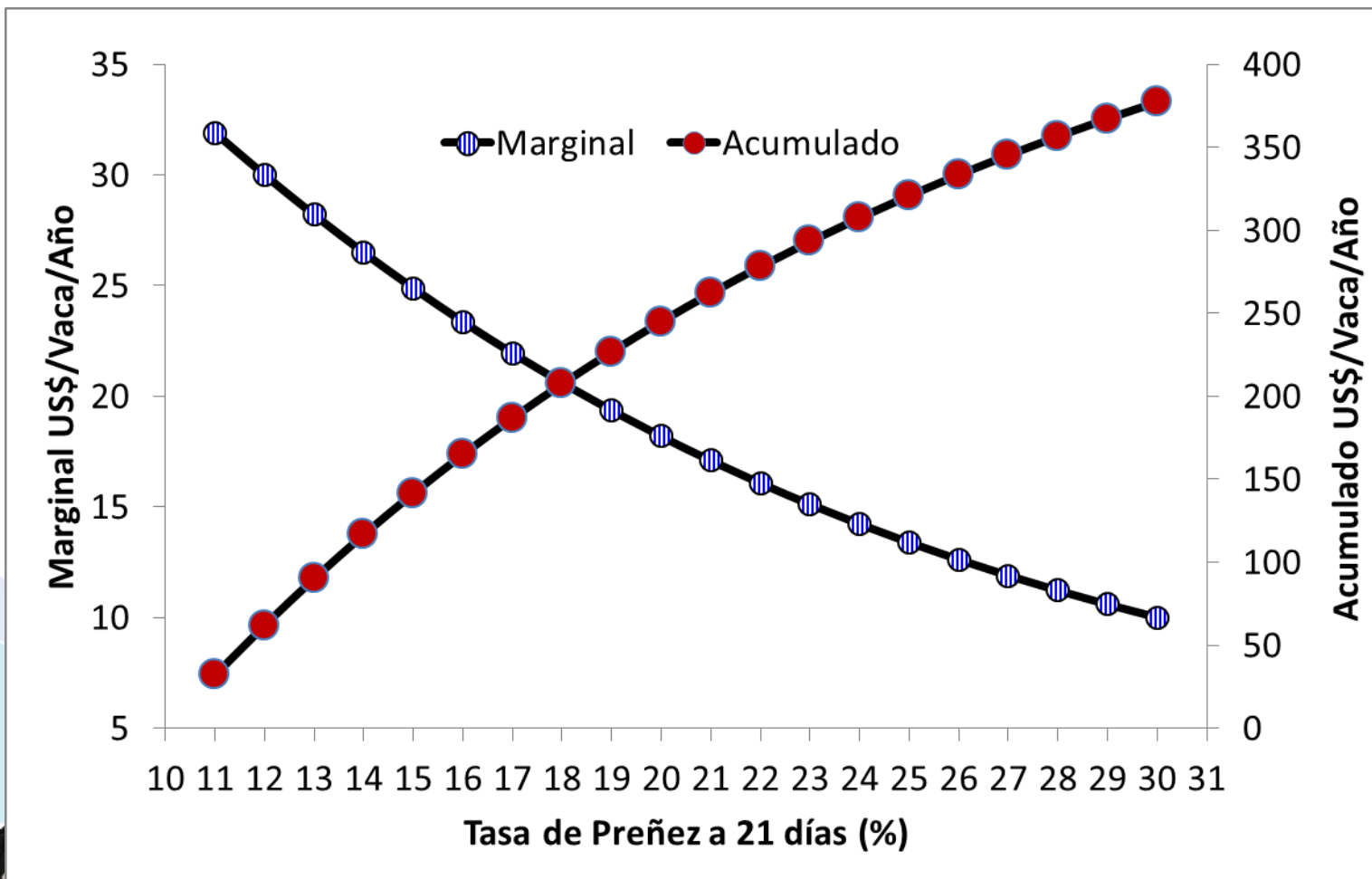
Analysis Results

Program	21-d Preg Risk (%)	Repro Cost (\$/cow/mo)	IOFC (\$/cow/year)	Cull (\$/cow/year)	Repro (\$/cow/year)	Calves (\$/cow/year)	Net Return (\$/cow/year)
Current Repro Program	18	25	1840.67	-164.62	-113.49	127.52	1690.08
Goal Repro Program	21	25	1873.33	-160.64	-103.79	135.83	1744.72

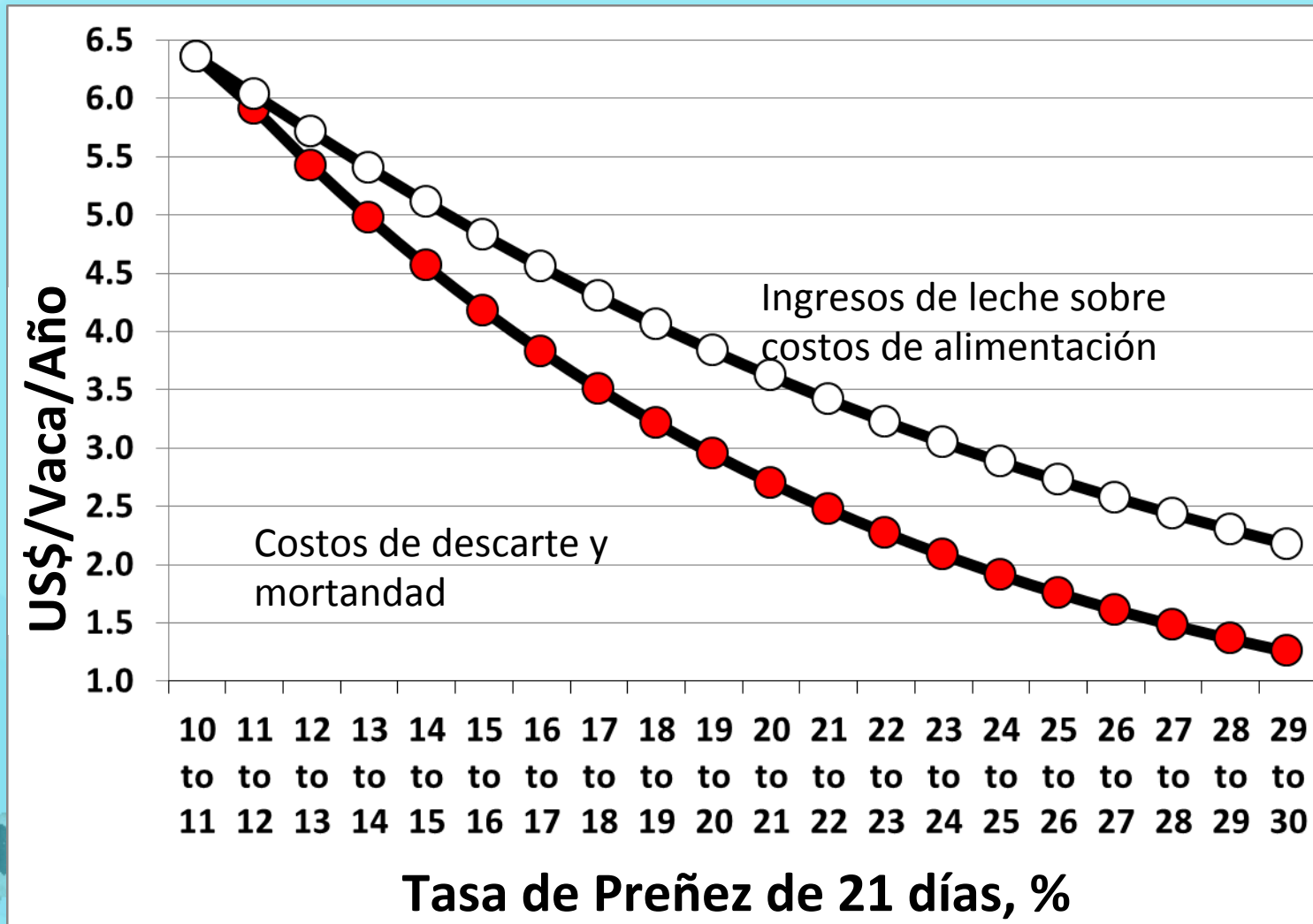
Economic value of improving pregnancy risk from 18% to 21% is \$54.64/cow/year.



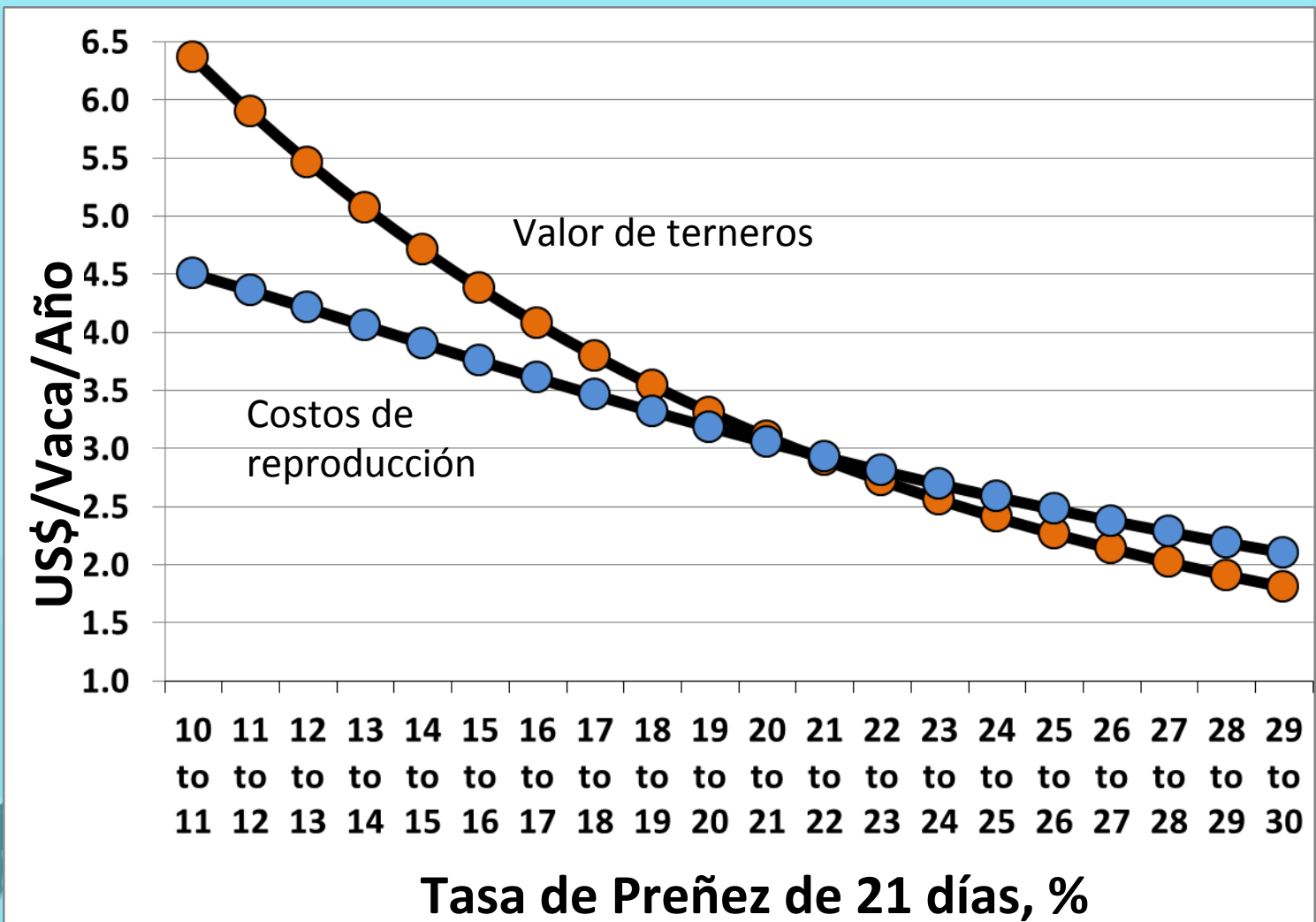
Algunos Resultados



Factores más Importantes



Factores más Importantes



Un análisis

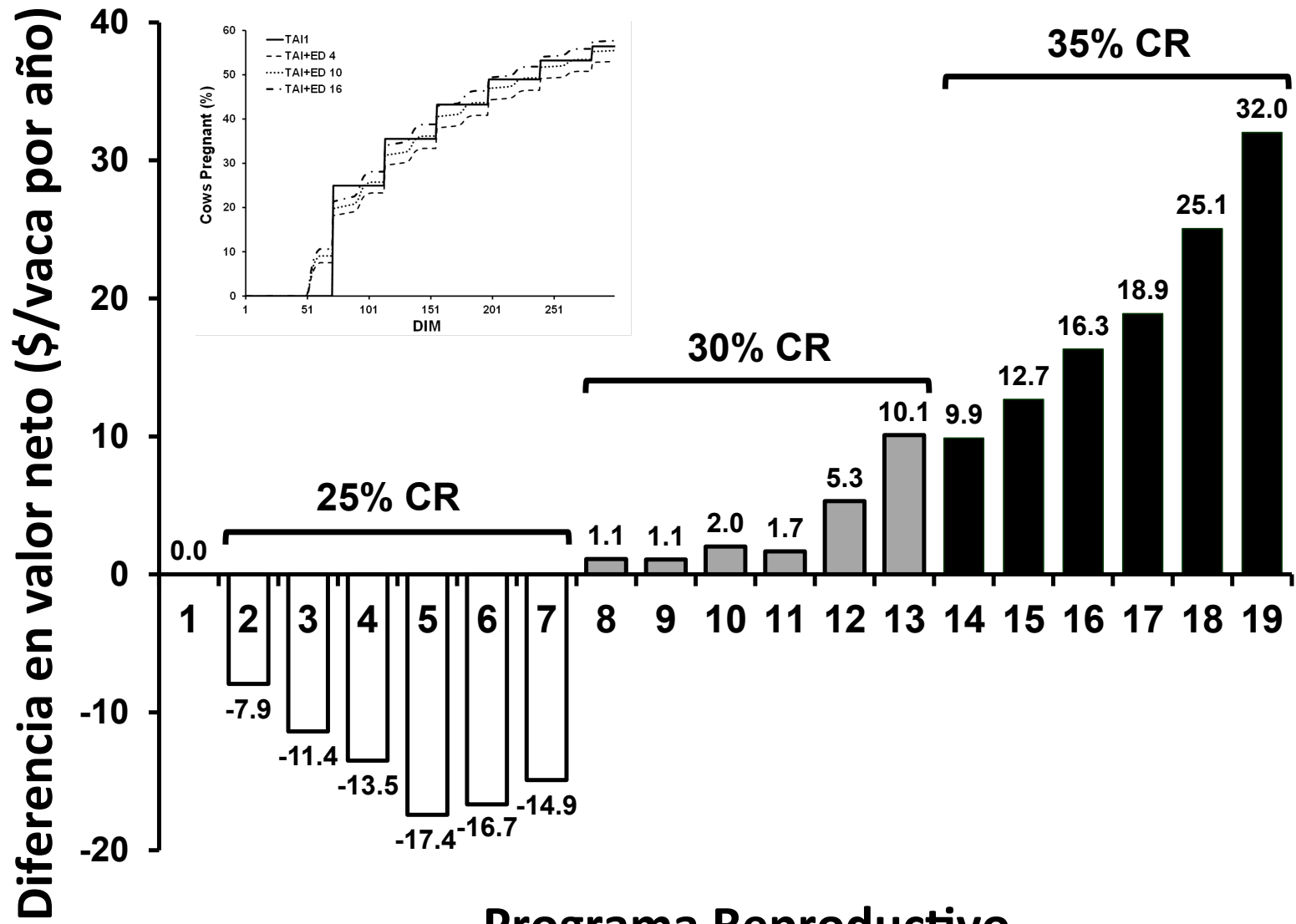
Programas Reproductivos Analizados (19)

Program number	Program	First AI			Second and subsequent AI		
		ED before first TAI ¹	CR ED ² before first TAI	CR TAI	ED before TAI	CR ED before TAI	CR TAI
1	TAI 1 ³	—	—	42	—	—	30
2	TAI+ED 2 ⁴	30	25	40	30	25	30
3	TAI+ED 3	40	25	38	40	25	30
4	TAI+ED 4	50	25	36	50	25	30
5	TAI+ED 5	60	25	34	60	25	28
6	TAI+ED 6	70	25	32	70	25	28
7	TAI+ED 7	80	25	30	80	25	28
8	TAI+ED 8	30	30	40	30	30	30
9	TAI+ED 9	40	30	38	40	30	30
10	TAI+ED 10	50	30	36	50	30	30
11	TAI+ED 11	60	30	34	60	30	28
12	TAI+ED 12	70	30	32	70	30	28
13	TAI+ED 13	80	30	30	80	30	28
14	TAI+ED 14	30	35	40	30	35	30
15	TAI+ED 15	40	35	38	40	35	30
16	TAI+ED 16	50	35	36	50	35	30
17	TAI+ED 17	60	35	34	60	35	28
18	TAI+ED 18	70	35	32	70	35	28
19	TAI+ED 19	80	35	30	80	35	28

Giordano et al., 2012

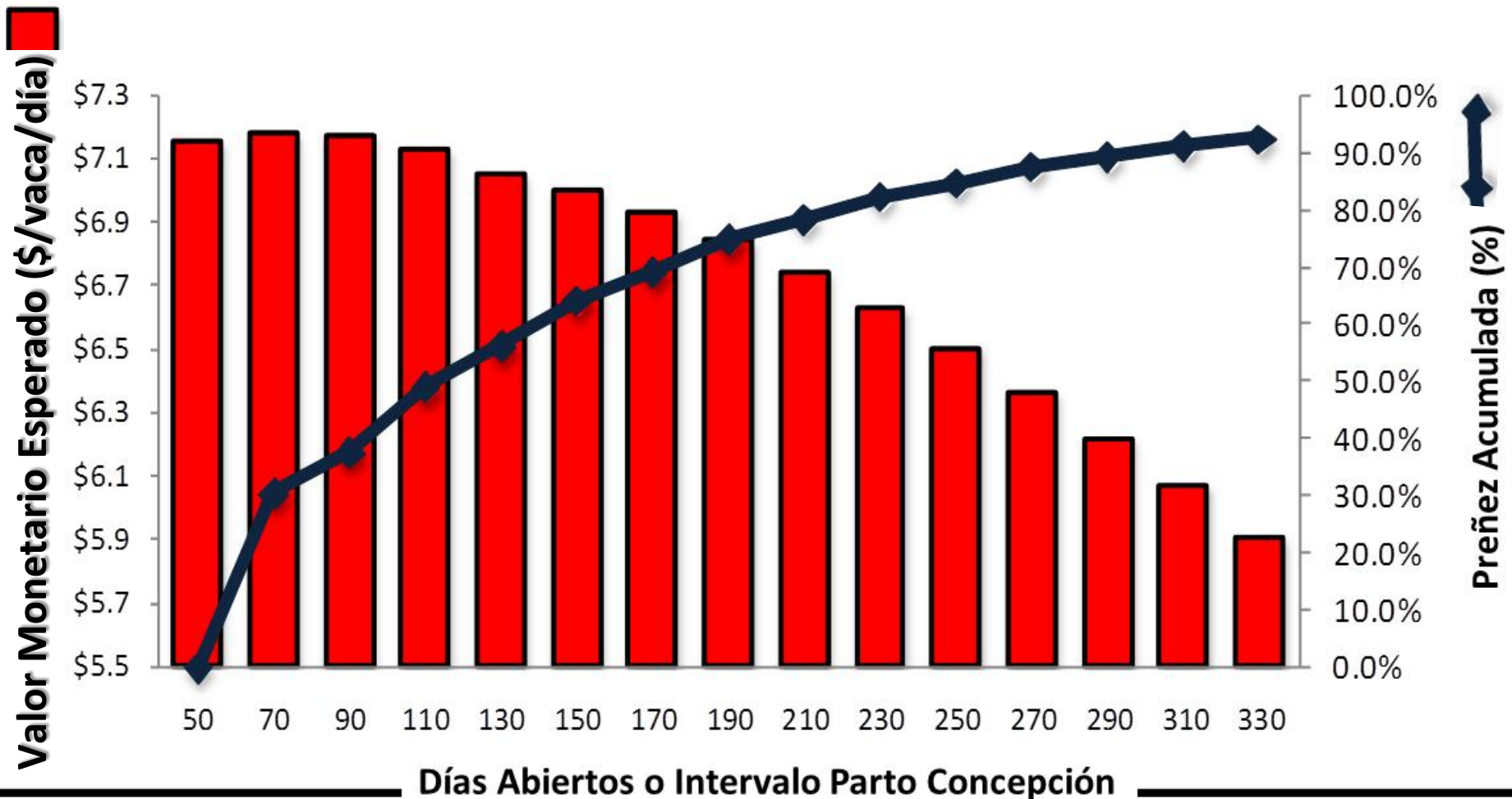


Un análisis



Otra Herramienta

Valor Monetario Esperado



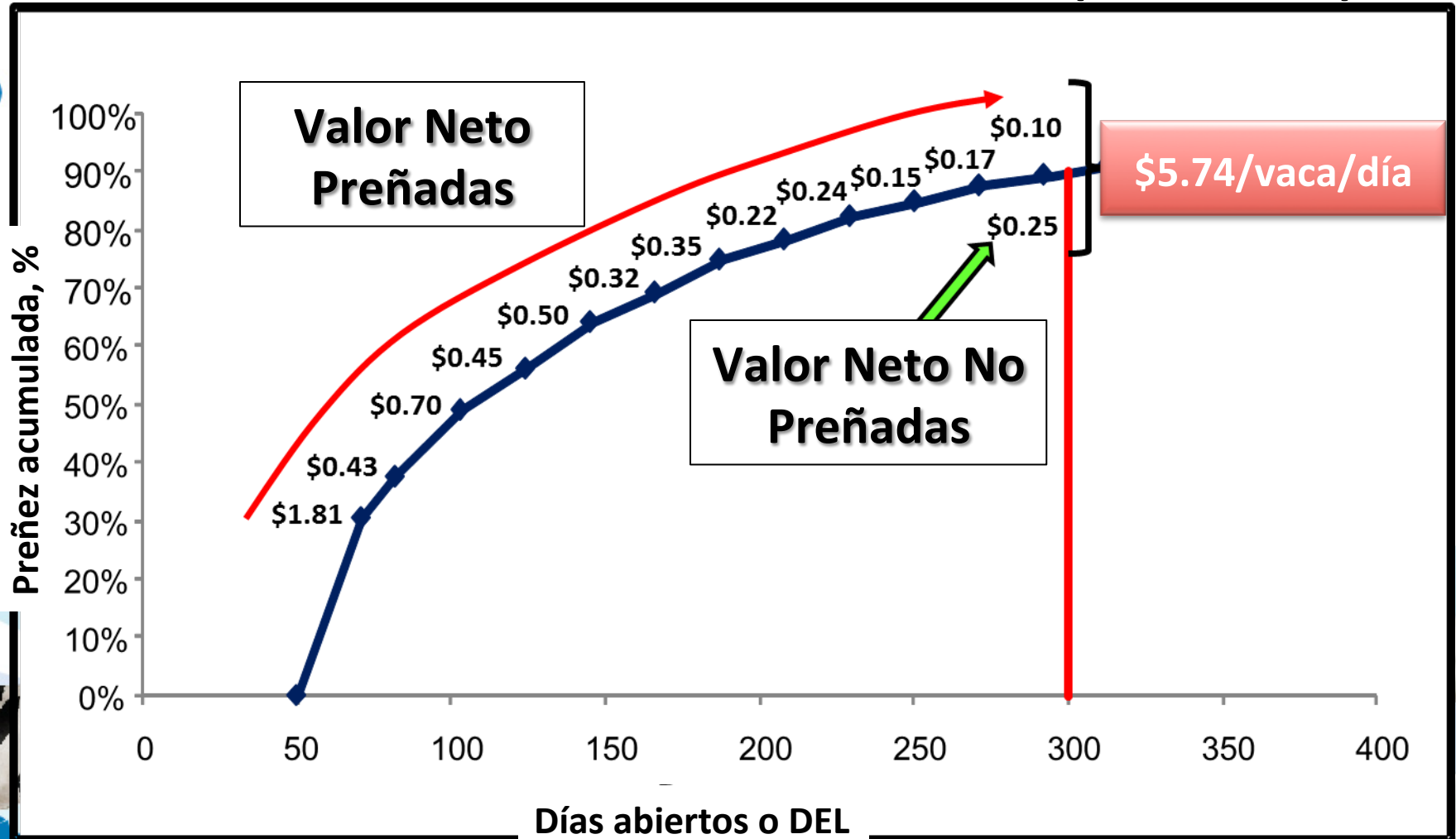
Valor Neto

→ Diferencia entre ingresos y egresos de una curva reproductiva



Valor Neto

→ Performance económica (\$Valor)



UW-DairyRepro\$Plus



UW-Dairy Repro\$ Plus
Victor E. Cabrera & Julio O. Giordano
Department of Dairy Science



UW-Dairy Repro\$ Plus
Victor E. Cabrera & Julio O. Giordano
Department of Dairy Science



Farm Name: _____ Location: _____

1. Herd Parameters

Lactating Cows, #	500
Parity 1	175
Parity 2	125
Parity ≥ 3	200
Body Weight, lb/cow	
Parity 1	1,350
Parity 2	1,400
Parity ≥ 3	1,450
Involuntary Culling, %/yr	20.0%
Mortality, %/yr	8.0%
Stillbirth, %/yr	6.0%

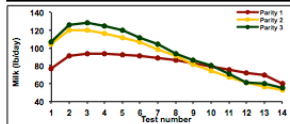
2. Economic Parameters

Milk Price, \$/cwt	15.00
Cost Feed Lactating, \$/lb DM	0.10
Dry Period Fixed Cost, \$/d	2.20
Female Calf Value, \$	125
Male Calf value, \$	50
Heifer Replacement Value, \$	1,250
Cow Salvage Value, \$	650
Labor Cost for Injection, \$/hr	15.00
Heat Detection Cost, \$/hr	15.00
AI Cost, \$/cow	15.00
Interest Rate, %/yr	5.0%

3. Lactation Curves (lb/cow/test)

(Own Farm Lactations (Entered) NUMBERS Below)

Test	Parity 1	Parity 2	Parity ≥ 3
1	77	105	107
2	91	120	128
3	94	120	128
4	94	116	125
5	93	112	120
6	91	107	112
7	89	98	104
8	87	91	94
9	83	82	86
10	79	75	81
11	76	68	71
12	72	61	61
13	70	57	60
14	60	53	55



4. Reproductive Program

	Current	Start day	Alternative	Start day
1 st Service postpartum	Ovsynch	Mod	Prasynch-Ovsynch-12	Final
2 nd and subsequent services	Ovsynch	Mod	Ovsynch	Final
Resynch before preg check	NO		YES	

5. Do you know total breeding costs (semen, hormones, and pregnancy diagnosis)?

If "Yes" check box

6. Reproductive Program Parameters

	Current	Alternative
Voluntary Waiting Period, d	60	72
Estrus Cycle Duration, d	22	
Maximum DIM for Breeding, d	330	
DIM to 1 st TAI, d	60	72
Interbreeding Interval, d	49	35
Heat Bred Before 1 st TAI, %	0%	0%
CR Heat Bred Before 1 st TAI, %	0%	0%
Heat Bred After 1 st TAI, %	0%	0%
CR Heat Bred After 1 st TAI, %	0%	0%
CR 1 st Service TAI, %	33%	42%
CR 2 nd + Services TAI, %	30%	30%
Cost of 1 st Service TAI, \$		
Cost of 2 nd + Services TAI, \$		
Cost of Heat Breeding, \$		
Cost resynch before preg check, \$		
Calving interval, d	13.7	
Dry Period, d	60	

7. Heat Detection Labor Cost

	Current	Alternative
Laborers	1	1
hr/d	2.5	2.5

8. Activity Monitors for Heat Detection

	Current	Alternative
System cost, \$	7,000	0
Number of monitors	250	0
Cost per monitor, \$	100	0
Maintenance, \$/yr	250	0
Life expectancy, yr	10	0
Salvage value, %	25%	0%

9. Pregnancy Diagnosis Cost

	Current	Alternative
Palpation, \$/hr	105	
Ultrasound, \$/hr		135
Blood Test, \$/cow		

10. Labor Required for Injections and Labor Required for Pregnancy Diagnosis

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
Current	Injections	1		1				
	hr/d	2		2				
	# Cows	50		30				
	Pregnancy Diagnosis	1						
	# Cows	30						
Alternative	Injections		2		1			
	hr/d		2.5		2			
	# Cows		75		60			
	Pregnancy Diagnosis		1					
	# Cows		30					

11. Hormones Cost

	Vial, \$	# Doses
GnRH	20	10
PGF	Estimate	25
P4 Insert		
HCG		

Parity Group to ANALYZE

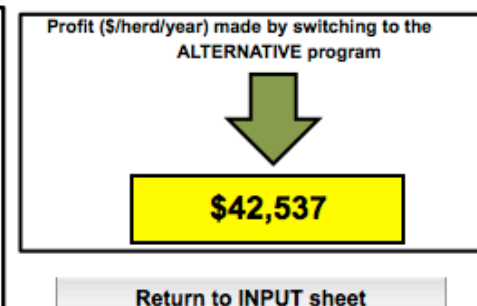
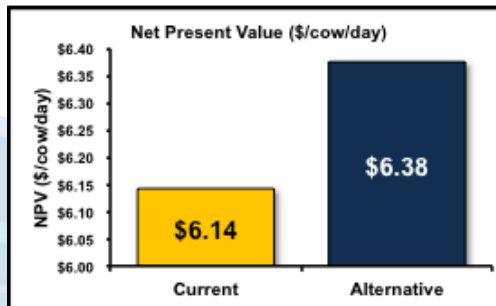
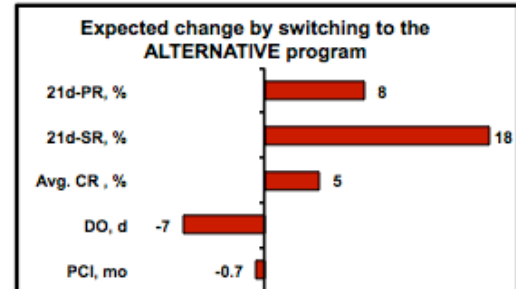
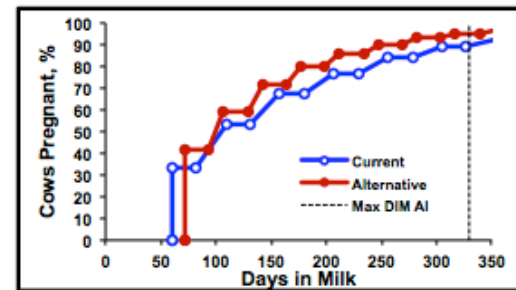
CALL

Run ANALYSIS



Reproductive Programs Summary

	Current	Alternative
1 st Service Postpartum	Ovsynch	Prasynch-Ovsynch-12
2 nd and Following Services	Ovsynch	Ovsynch
Voluntary Waiting Period, d	60	72
Maximum DIM for Breeding, d		330
DIM 1st TAI, d	60	72
Interbreeding Interval, d	49	35
Heat Bred Before 1 st TAI, %	0%	0%
CR Heat Bred Before 1 st TAI, %	0%	0%
Heat Bred After 1 st TAI, %	0%	0%
CR Heat Bred After 1 st TAI, %	0%	0%
CR 1 st Service TAI, %	33%	42%
CR 2 nd + Services TAI, %	30%	30%
Cost 1st Service Breeding, \$	26.7	34.5
Cost Resynch Breedings, \$	26.7	28.5
Cost Heat Breedings, \$	18.5	19.5
Pregnancy Diagnosis Method	Palpation	Ultrasound
Pregnancy Diagnosis Cost, \$	3.5	4.5
Activity Monitors for Heat Detection		
System + monitors cost, \$	32000	0
Salvage value, \$	8000	0
Value after depreciation, \$	24000	0
Total cost per d of period, \$/d	6.58	0.00
Maintenance, \$/d	0.68	0.00
Cost Per Cow/d, \$	0.017	0.000



Describiendo el Predio

Rebaño

Lactating Cows, #	500
Parity 1	175
Parity 2	125
Parity \geq 3	200
Body Weight, lb/cow	
Parity 1	1,350
Parity 2	1,400
Parity \geq 3	1,450
Involuntary Culling, %/yr	20.0%
Mortality, %/yr	6.0%
Stillbirth, %/yr	6.0%

Datos Económicos

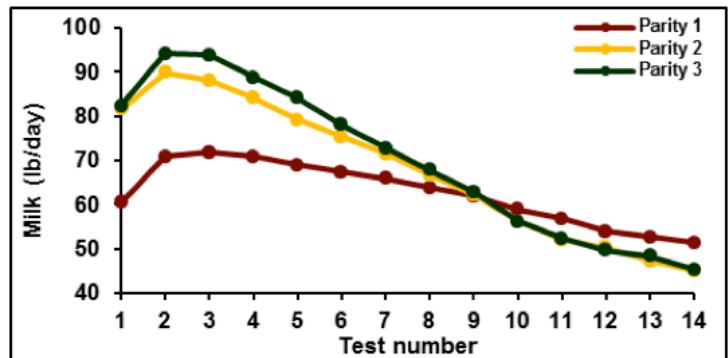
Milk Price, \$/cwt	15.00
Cost Feed Lactating, \$/lb DM	0.10
Dry Period Fixed Cost, \$/d	2.20
Female Calf Value, \$	125
Male Calf value, \$	50
Heifer Replacement Value, \$	1,250
Cow Salvage Value, \$	650
Labor Cost for Injection, \$/hr	15.00
Heat Detection Cost, \$/hr	15.00
AI Cost, \$/cow	15.00
Interest Rate, %/yr	5.0%

Describiendo el Predio

Curvas de lactancia

Own Farm Lactations (Enter/Edit NUMBERS Below)

Test	Parity 1	Parity 2	Parity ≥ 3
1	77	105	107
2	91	120	126
3	94	120	128
4	94	116	125
5	93	112	120
6	91	107	112
7	89	98	104
8	87	91	94
9	83	82	86
10	79	75	81
11	76	68	71
12	72	61	61
13	70	57	60
14	60	53	55



Personalizando el Predio

Programas Reproductivos

	Current		Start day	
1 st Service postpartum	Ovsynch	◆	Tue	◆
2 nd and subsequent services	Ovsynch	◆	Tue	◆
Resynch before preg check	YES			◆

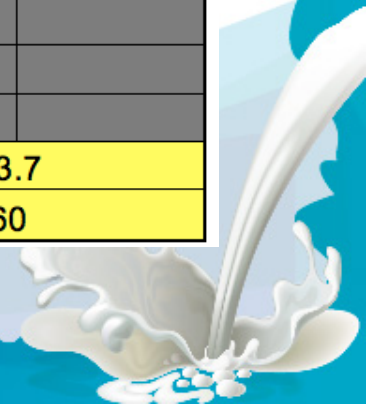
	Alternative		Start day	
1 st Service postpartum	Presynch-Ovsynch-12	◆	Thu	◆
2 nd and subsequent services	Ovsynch	◆	Tue	◆
Resynch before preg check	YES			◆



Personalizando el Predio

Programas Reproductivos

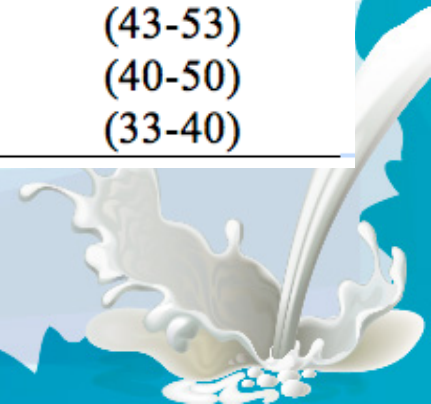
	Current	Alternative
Voluntary Waiting Period, d	60	72
Estrus Cycle Duration, d	22	
Maximum DIM for <u>Breeding</u> ,d	330	
DIM to 1 st TAI, d	60	72
Interbreeding Interval, d	49	35
Heat Bred Before 1 st TAI, %	50%	50%
CR Heat Bred Before 1 st TAI, %	35%	35%
Heat Bred After 1 st TAI, %	40%	40%
CR Heat Bred After 1 st TAI, %	35%	35%
CR 1 st Service TAI, %	33%	42%
CR 2 nd + Services TAI, %	30%	30%
Cost of 1 st Service TAI, \$		
Cost of 2 nd + Services TAI, \$		
Cost of Heat Breeding, \$		
Cost resynch before <u>preg</u> check, \$		
Calving Interval, d	13.7	
Dry Period, d	60	



Fertilidad Esperada al Primer

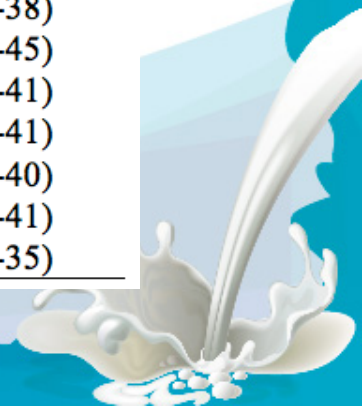
Servicio de la IATF

Synchronization Program	VWP (d)	Conception Rate (%)	
		Mean	Range
Presynch-Ovsynch-14	70-85	37	(32-42)
Presynch-Ovsynch-12	70-85	42	(37-47)
Presynch-Ovsynch-11	70-85	43	(37-47)
Presynch-Ovsynch-10	70-85	44	(37-47)
Double-Ovsynch	70-85	47	(40-50)
G-6-G	70-85	45	(37-47)
Ovsynch	60-75	33	(30-37)
Cosynch-72	60-75	26	(25-33)
Presynch-Ovsynch-12 w/CIDR	70-85	45	(40-50)
Double-Ovsynch w/ CIDR	70-85	50	(43-53)
Ovsynch w/ CIDR	60-75	36	(40-50)
Cosynch-72 w/ CIDR	60-75	32	(33-40)



Fertilidad Esperada para subsecuentes servicios IATF

Synchronization Program	Interbreeding Interval	Conception Rate (%)	
	(d)	Mean	Range
Ovsynch-Day 25	35	27	(24-30)
Ovsynch-Day 32	42	30	(25-35)
Ovsynch-Day 39	49	28	(25-32)
Double-Ovsynch	49	38	(33-42)
Short-Double-Ovsynch	42	34	(30-38)
HGPG (hCG-7d-Ovsynch)	35	37	(33-41)
GGPG (GnRH-7d-Ovsynch)	35	34	(27-37)
G-6-G	49	35	(32-38)
Cosynch-72-Day 25	35	23	(20-25)
Cosynch-72-Day 32	42	28	(24-32)
Cosynch-72-Day 39	49	25	(23-28)
Ovsynch-Day 32 w/ CIDR	42	33	(28-38)
Double-Ovsynch w/ CIDR	49	41	(36-45)
Short-Double-Ovsynch w/CIDR	42	37	(33-41)
HGPG (hCG-7d-Ovsynch) w/CIDR	35	40	(36-41)
GGPG (GnRH-7d-Ovsynch) w/ CIDR	35	35	(30-40)
G-6-G w/CIDR	49	38	(33-41)
Cosynch-72-Day 32 w/CIDR	42	31	(27-35)



Personalizando el Predio

M.O. Detección de Celos

	Current	Alternative
Laborers	1	1
hr/d	2.5	2.5

Monitores de Actividad para Detección de Celos

Nuevo!

	Current	Alternative
System Cost, \$	0	7,000
Number of monitors	0	350
Cost per monitor, \$	0	110
Maintenance, \$/yr	0	350
Life expectancy, yr	0	10
Salvage value, %	0%	25%

Diagnóstico de Preñez

	Current	Alternative
Palpation, \$/hr	105	
Ultrasound, \$/hr		135
Blood Test, \$/cow		

Personalizando el Predio

M.O. para aplicaciones y diagnóstico de preñez

			Mon	Tue	Wed	Thu	Fri	Sat	Sun
Actual	Injections	Laborers	1		1				
		hr/d	2		1				
		# Cows	50		30				
	Pregnancy Diagnosis	hr/d	1						
		# Cows	30						

			Mon	Tue	Wed	Thu	Fri	Sat	Sun
Alternatio	Injections	Laborers		2		1			
		hr/d		2.5		2			
		# Cows		75		60			
	Pregnancy Diagnosis	hr/d		1					
		# Cows		30					



Personalizando el Predio

Costos de Hormonas

			Vial, \$	# Doses
GnRH	Factrel	▼	20	10
PGF	Estrumate	▼	25	10
P4 Insert	CIDR	▼		
hCG	Chorulon	▼		

Ejecutar un análisis

ial



Parity Group to ANALYZE

All

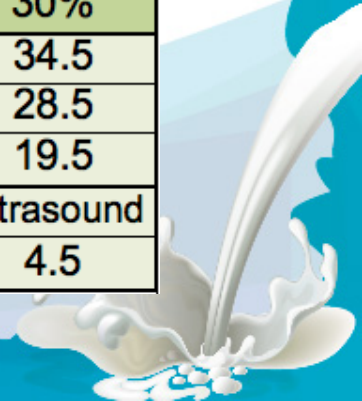
Run ANALYSIS



Resultado del Análisis

Resumen de los
Programas
Reproductivos
Analizados

	Current	Alternative
1 st Service Postpartum	Ovsynch	Presynch-Ovsynch-12
2 nd and Following Services	Ovsynch	Ovsynch
Voluntary Waiting Period, d	60	72
Maximum DIM for Breeding, d	330	
DIM 1st TAI, d	60	72
Interbreeding Interval, d	49	35
Heat Bred Before 1 st TAI, %	50%	50%
CR Heat Bred Before 1 st TAI, %	35%	35%
Heat Bred After 1 st TAI, %	40%	40%
CR Heat Bred After 1 st TAI, %	35%	35%
CR 1 st Service TAI, %	33%	42%
CR 2 nd + Services TAI, %	30%	30%
Cost 1st Service Breeding, \$	26.7	34.5
Cost Resynch Breedings, \$	26.7	28.5
Cost Heat Breedings, \$	18.5	19.5
Pregnancy Diagnosis Method	Palpation	Ultrasound
Pregnancy Diagnosis Cost, \$	3.5	4.5



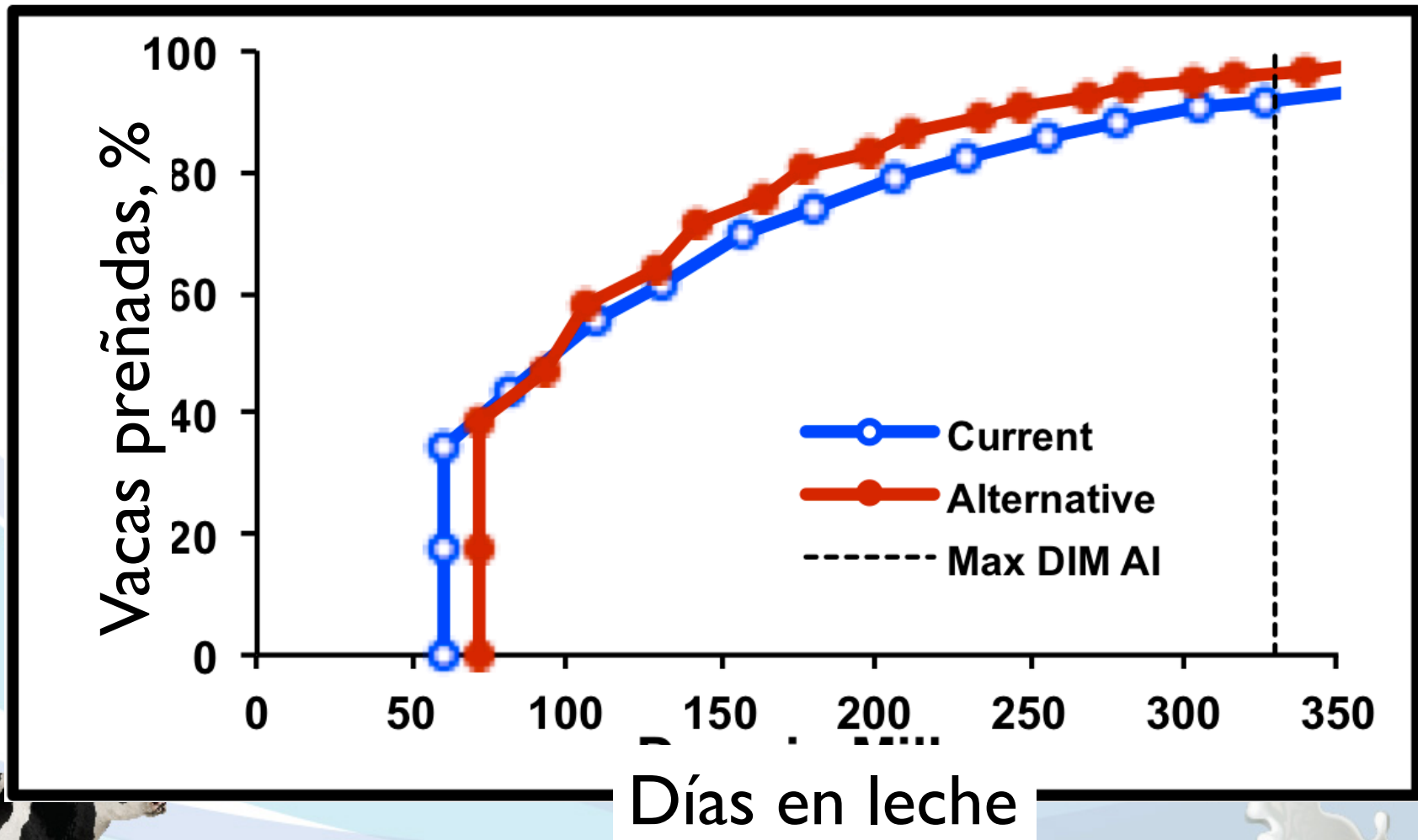
Análisis de los Resultados

Monitores de Actividad para Detección de Celos

	Current	Alternative
System + monitors cost, \$	0	32000
Salvage value, \$	0	8000
Value after depreciation, \$	0	24000
Total cost per d of period, \$/d	0.00	6.58
Maintenance, \$/d	0.00	0.68
Cost Per Cow/d, \$	0.000	0.017

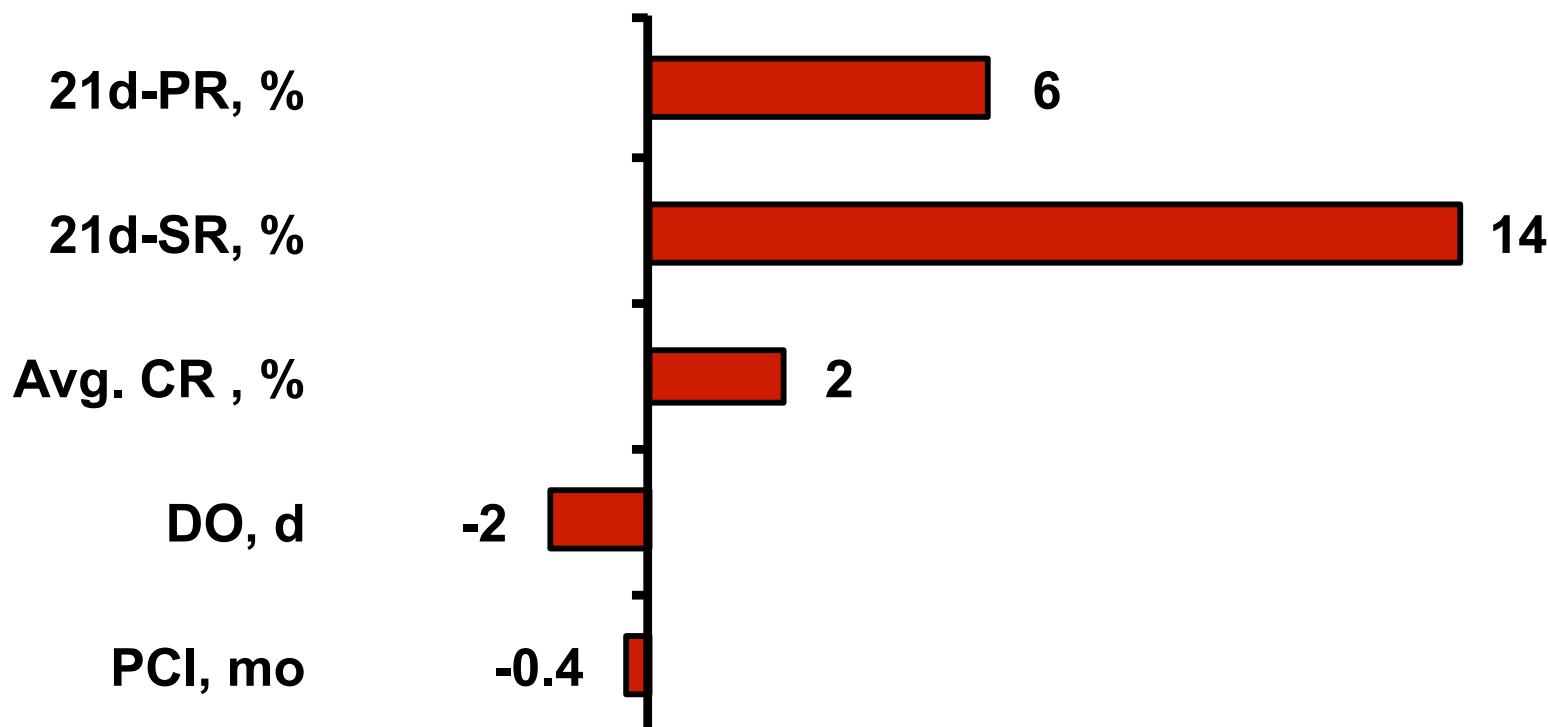


Análisis de los Resultados



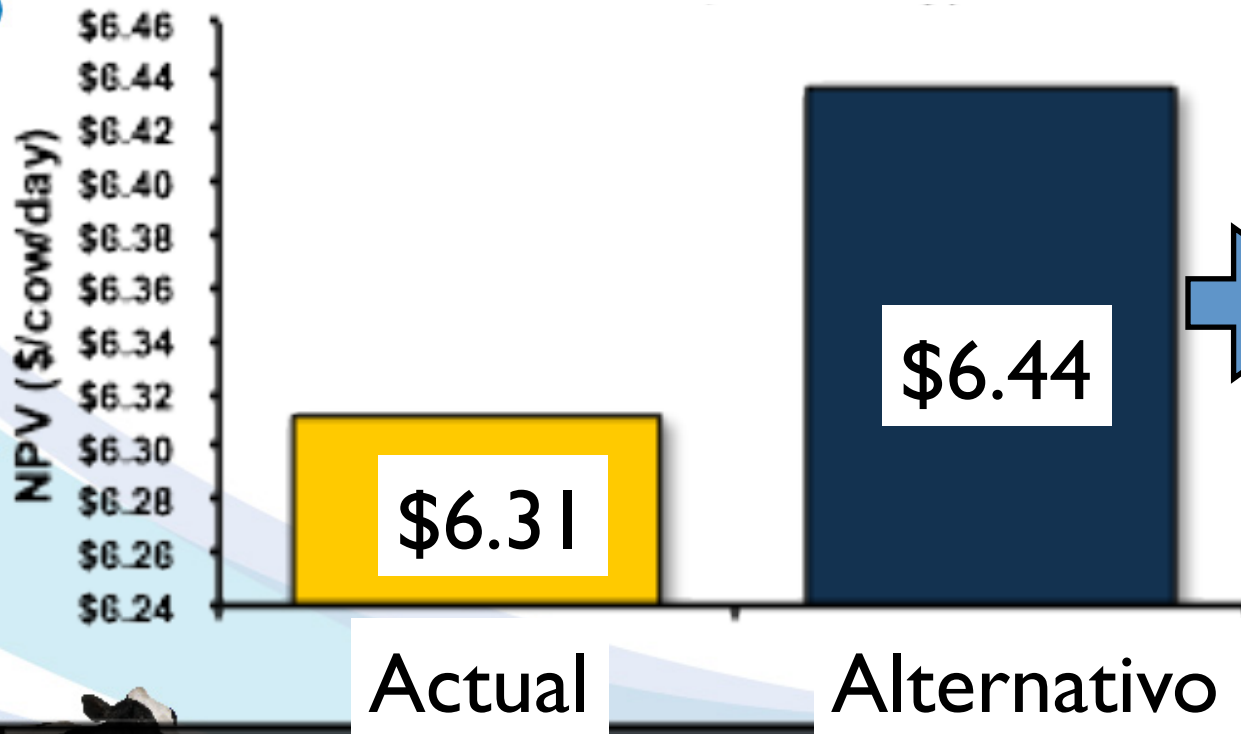
Análisis de los Resultados

Cambio esperado por adoptar el programa alternativo



Rendimiento Económico

Valor presente neto, \$/vaca-día



\$47,450

por 1,000 vacas al año

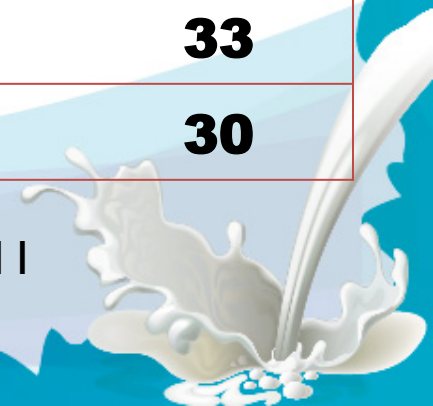


Una Investigación

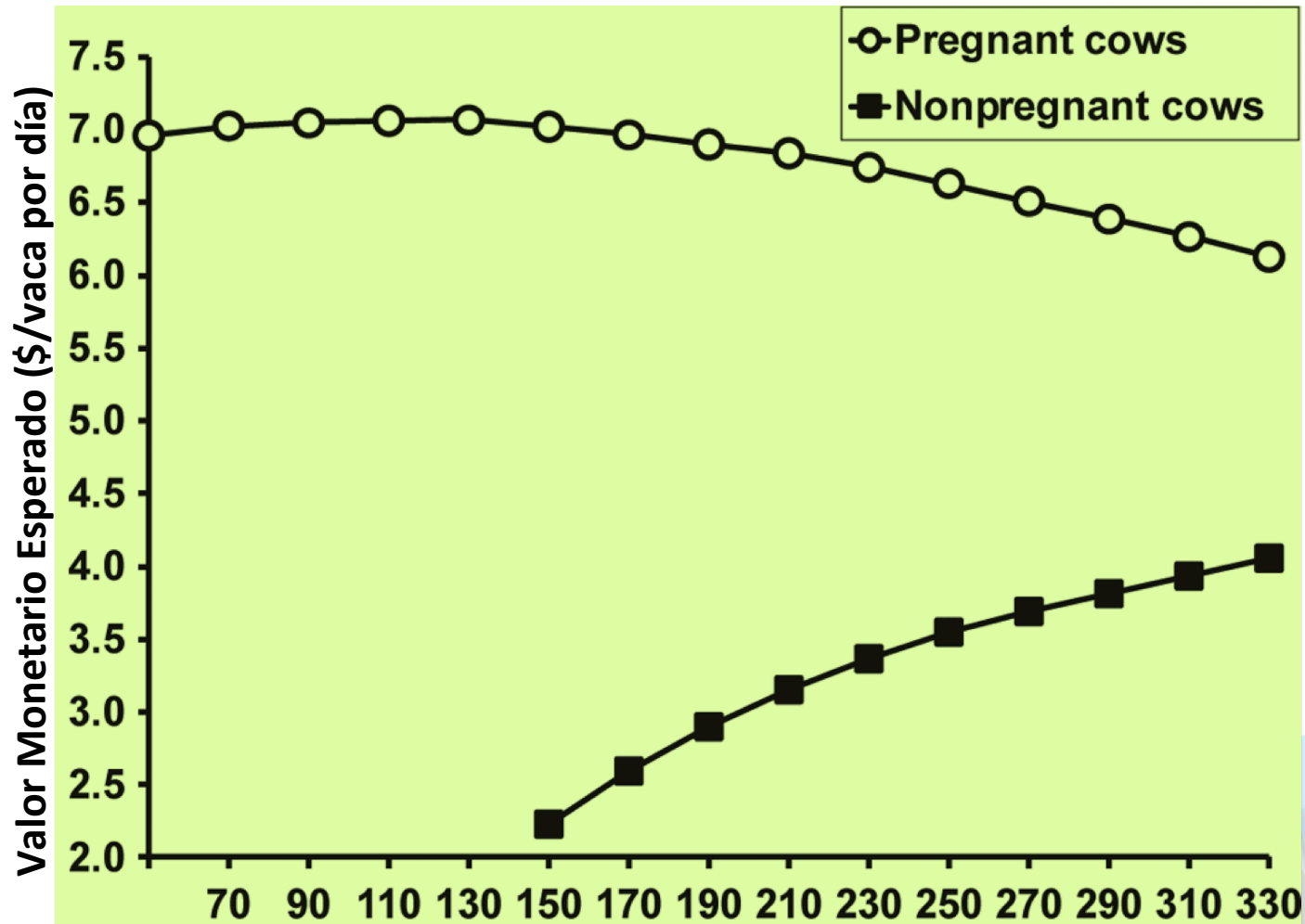
Programas evaluados

		Programa A	Programa B	Programa C
1 ^{er} Servicio		Double-Ovsynch		Detección de Celo
≥ 2 ^{do} Servicios		Resynch-D32	Double-Ovsynch	Detección de Celo
Periodo de Espera Voluntaria	(d)	82	82	50
Intervalo entre Servicios	(d)	42	49	21
TC 1 ^{er} Servicio	(%)	45	45	33
TC ≥ 2 ^{do} Servicios	(%)	30	38	30

Giordano et al., 2011



Resultados



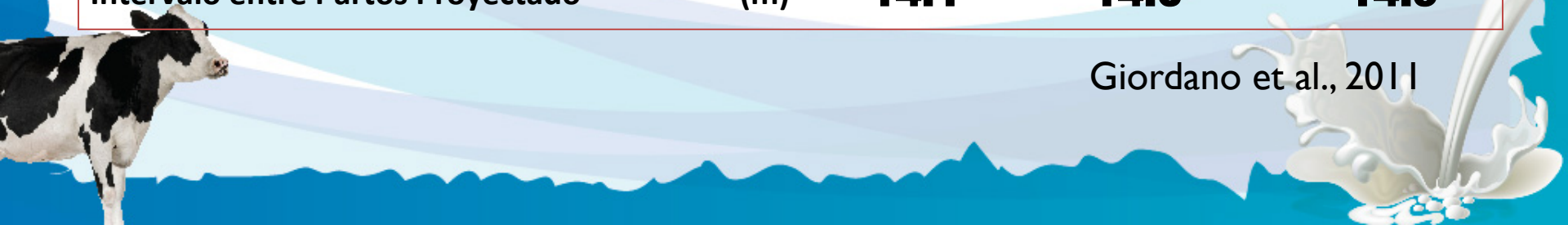
DEL

Giordano et al., 2011

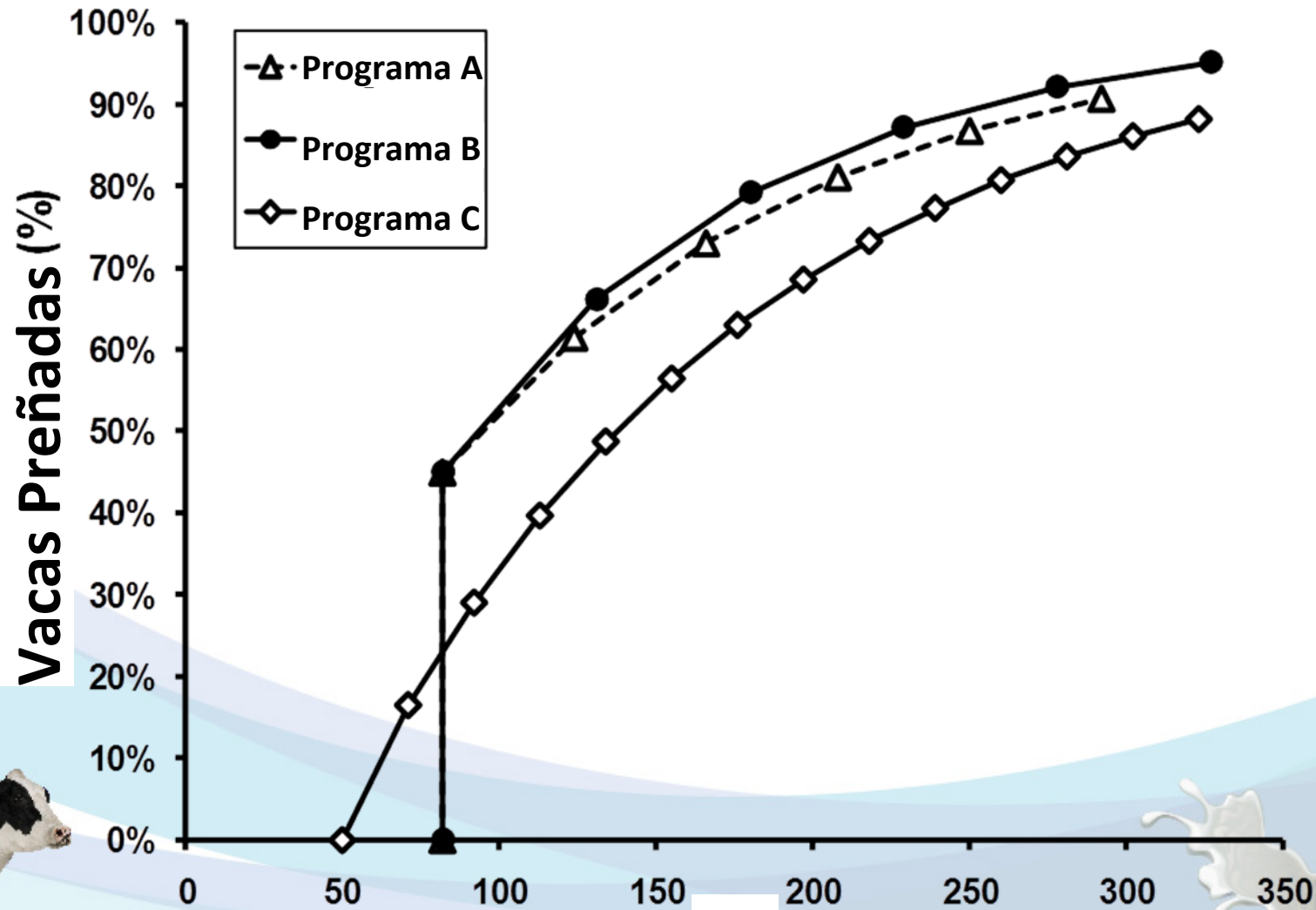
Resultados

		Programa A	Programa B	Programa C
1 ^{er} Servicio		Double-Ovsynch		Detección de Celo
≥ 2 ^{do} Servicios		Resynch-D32	Double-Ovsynch	Detección de Celo
Tasa de Preñez c/21 Días	(%)	22	25	15
Tasa de Inseminación c/21 Días	(%)	62	60	50
Promedio TC en todos Servicios IA	(%)	38	42	32
Promedio de Días Abiertos	(d)	131	137	152
Intervalo entre Partos Proyectado	(m)	14.1	14.0	14.9

Giordano et al., 2011



Resultados

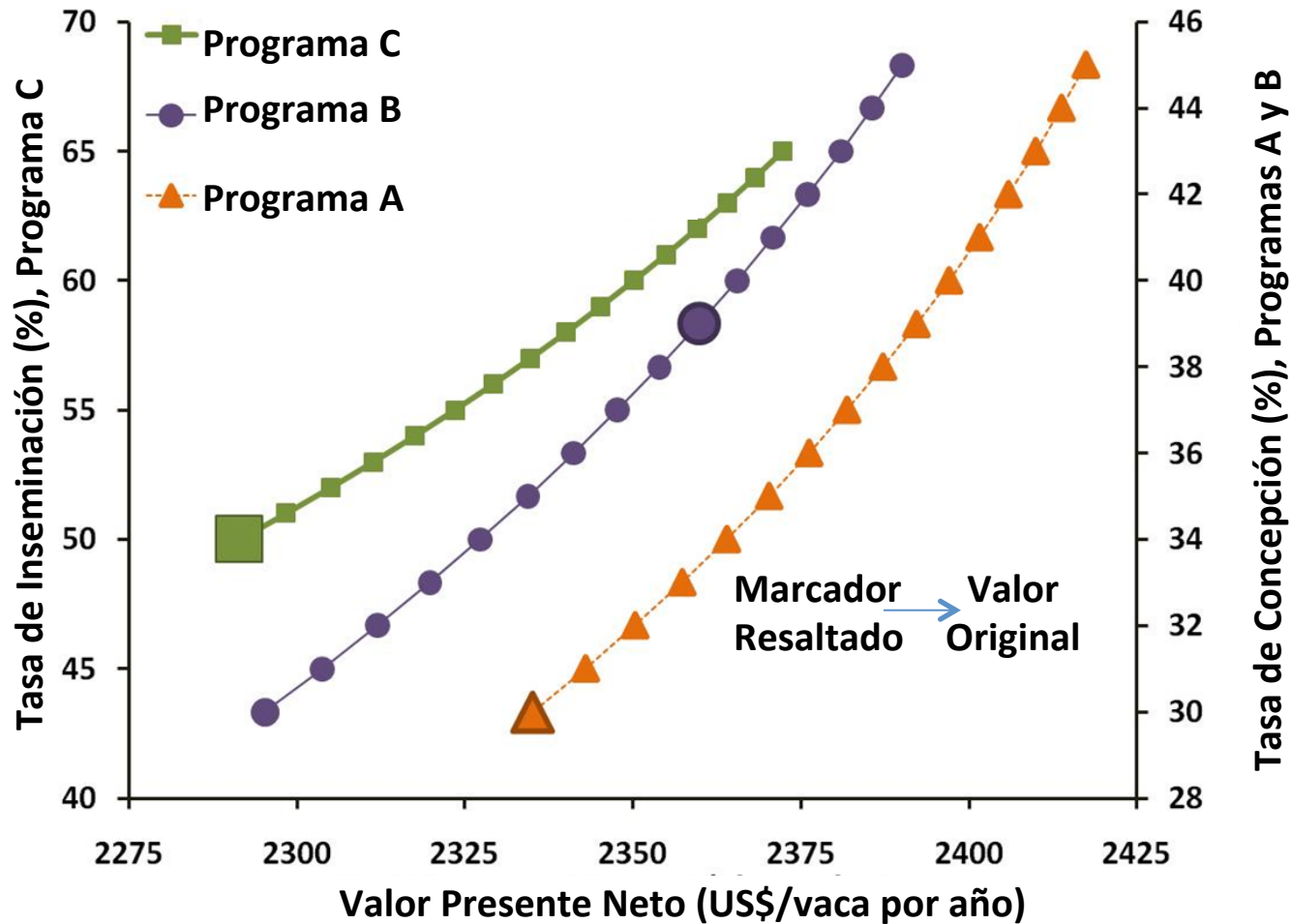


DEL

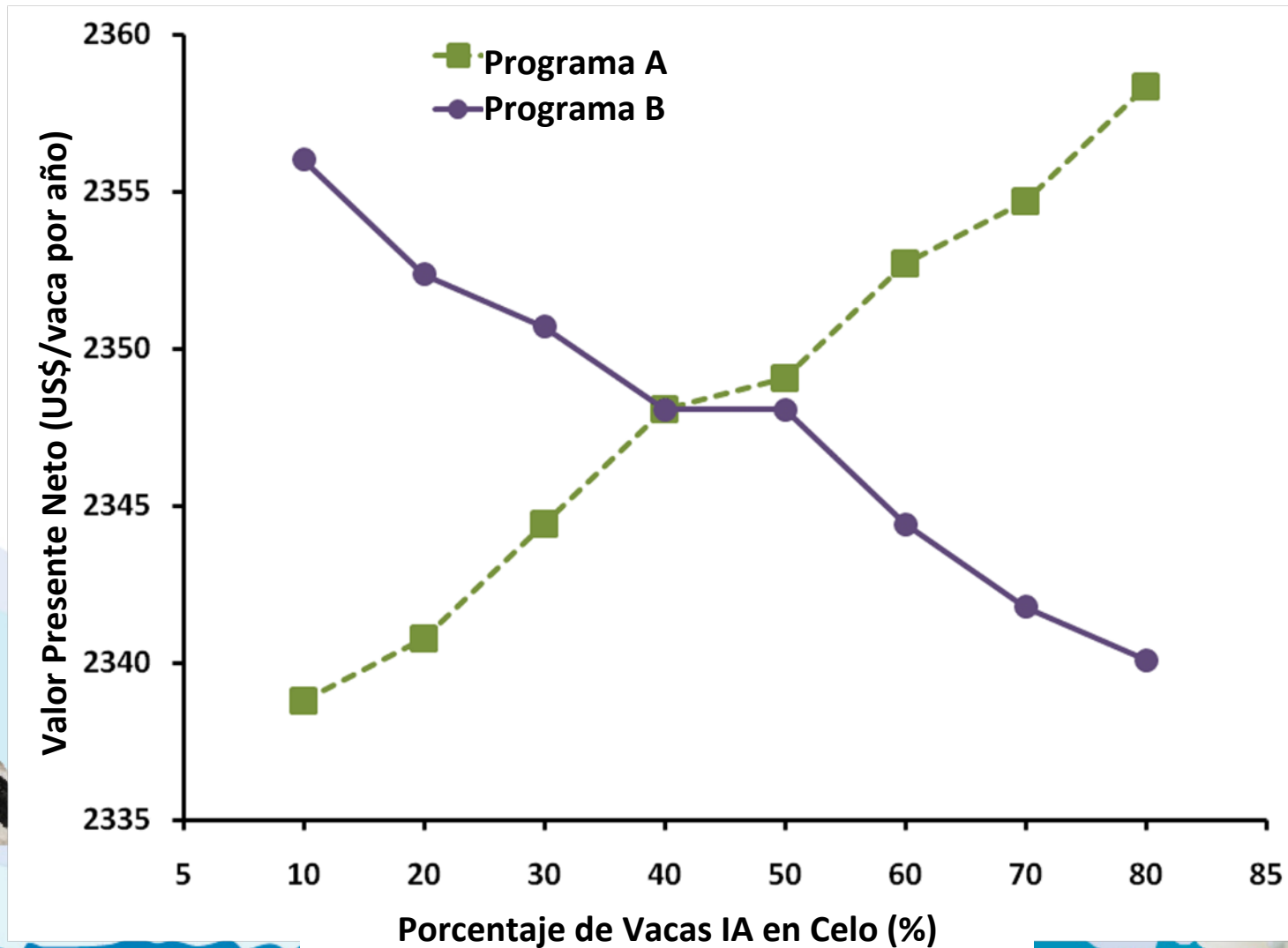
Giordano et al., 2011



Resultados



Resultados



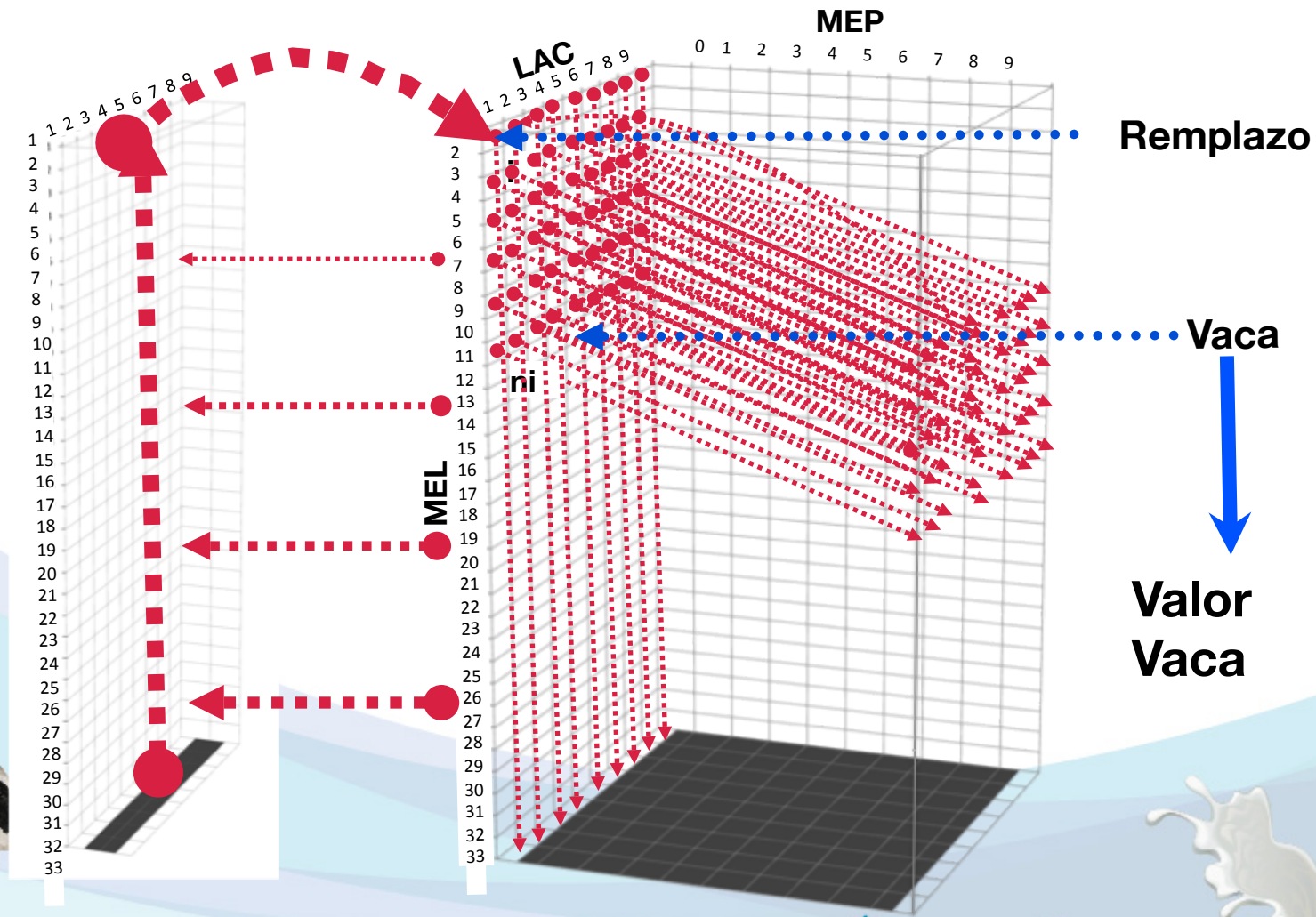
One more model

Overview	Single Cow Analysis	Herd Analysis
INPUTS - Edit Values in This Block		
Evaluated Cow Variables		
Current Lactation	3	↓
Current Months after Calving	5	↓
Current Months in Pregnancy	1	↓
Expected Milk Production Rest of Lactation, %	100	
Expected Milk Production Next Lactations, %	100	
Replacement Cow Variable		
Expected genetic improvement, % additional milk	0	
Herd Production and Reproduction Variables		
Herd Turnover Ratio, %/year	35	
Rolling Herd Average, lb/cow per year	24,000	↓
21-d Pregnancy Rate, %	18	↓
Reproduction Cost, \$/cow per month	20	
Last Month After Calving to Breed a Cow	10	↓
Do-not-Breed Cow Minimum Milk, lb/day	50	
Pregnancy Loss after 35 Days Pregnant, %	22.6	
Average Cow Body Weight, lb	1306	
Herd Economic Variables		
Replacement Cost, \$/cow	1300	
Salvage Value, \$/lb live weight	0.38	
Calf Value, \$/calf	100	
Milk Price, \$/cwt	16	
Milk Butterfat, %	3.5	
Feed Cost Lactating Cows, \$/lb dry matter	0.1	
Feed Cost Dry Cows, \$/lb dry matter	0.08	
Interest Rate, %/year	6	
<input type="button" value="Analyze"/>		
OUTPUTS - Interactive Results		
Value of the Cow, \$	628	
Compared Against a Replacement, \$		
Milk Sales, \$	148	
Feed Cost, \$	-157	
Calf Value, \$	26	
Non-reproductive Cull, \$	-126	
Mortality Cost, \$	-24	
Reproductive Cull, \$	12	
Reproduction Costs, \$	45	
Replacement Transaction, \$	704	
Herd Structure at Steady State		
Days in milk	224	
Days to Conception	122	
Percent of Pregnant	52	
Reproductive Culling, %	8	
Mortality, %	3	
1st Lactation, %	43	
2 nd Lactation, %	27	
> 3 rd Lactation, %	30	
Economics of an Average Cow, \$/year		
Net Return, \$	1998	
Milk Sales, \$	3834	
Feed Cost, \$	-1522	
Calf Sales, \$	60	
Non-Reprod. Culling Cost, \$	-198	
Mortality Cost, \$	-38	
Reproductive Culling Cost, \$	-59	
Reproductive Cost, \$	-80	



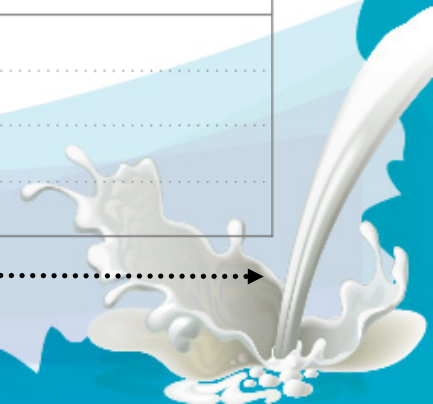
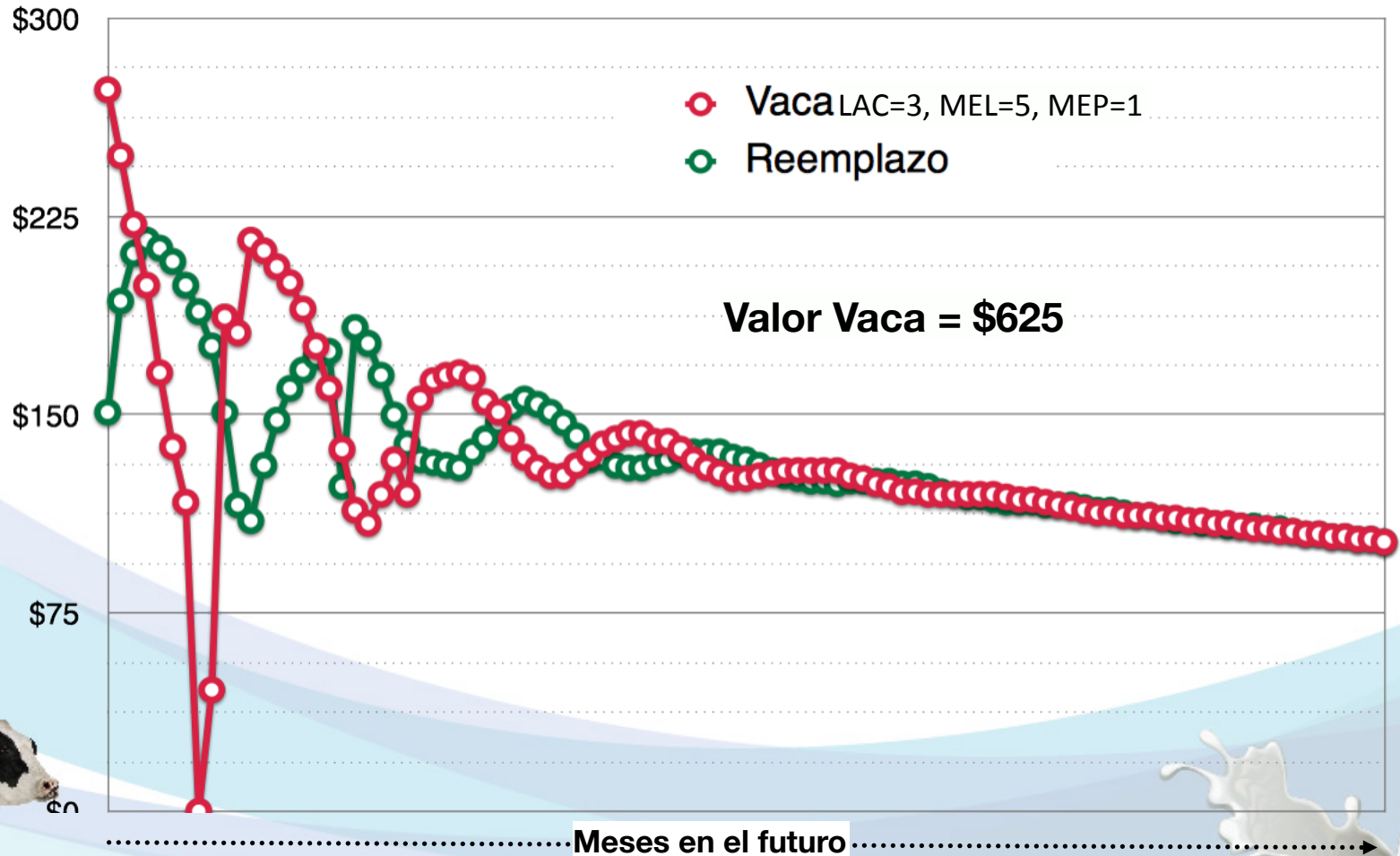
Como calcular el valor vaca?

Cadenas de Markov que simulan las dinámicas de un hato



Ingreso neto

Ingreso neto futuro esperado

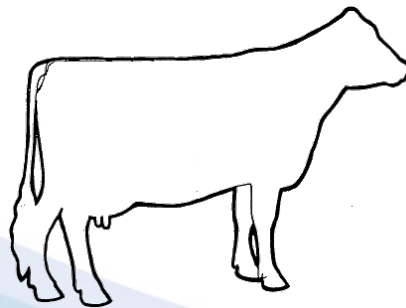


El valor de un nueva preñez

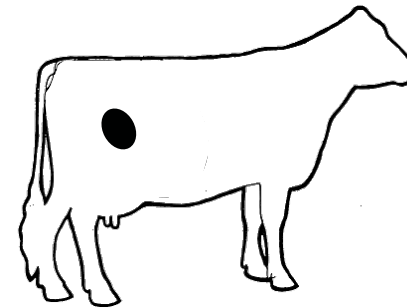
Cuanto mas cuando una vaca queda preñada?

Diferencia en el valor vaca:

- Vaca quedando preñada
- Vaca permaneciendo abierta



Vs.



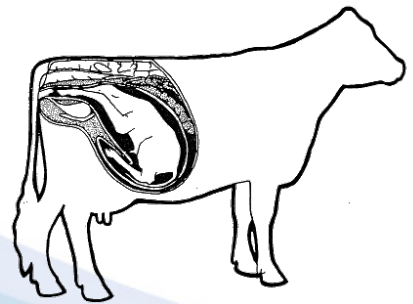


El costo de la perdida de una preñez

Cuanto menos cuando una vaca aborta?

Diferencia en el valor vaca:

- Vaca permaneciendo preñada
- Vaca perdiendo preñez



Vs.

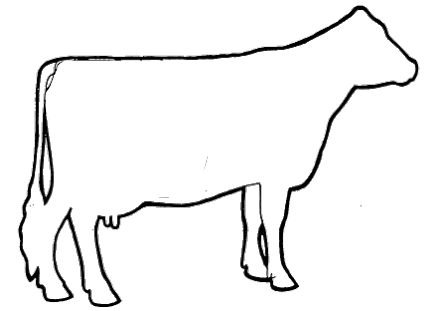


Ilustración de modelo

Producción promedio de vaca y reemplazo

Valor de vaca abierta

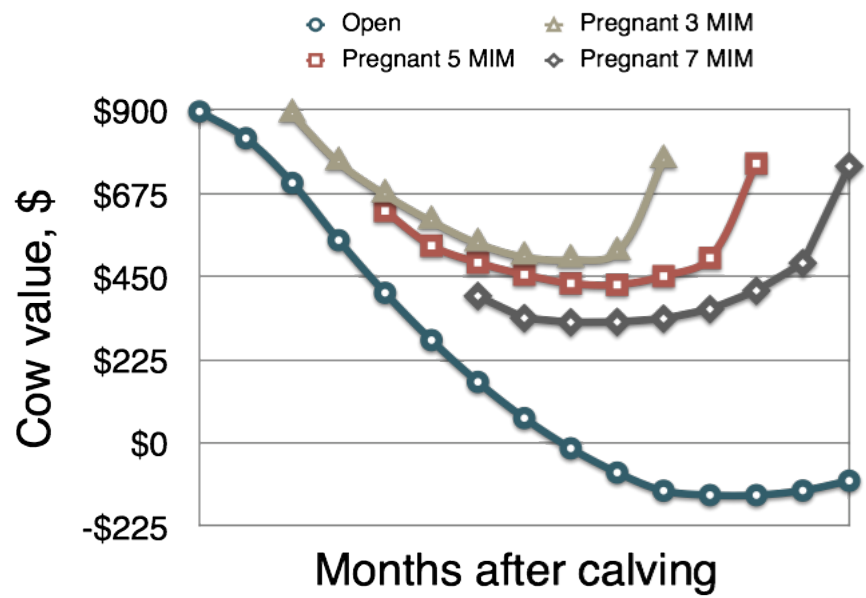
- Disminuye
- Se convierte en negativo

Valor de vaca preñada

- Mayor que vaca abierta
- Forma de U
- Valor similar al parto

Valor vaca global

- Aumenta hasta lactancia 3 o 4, luego disminuye



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al
2013



Gracias



Hotel Velas Vallarta, Puerto Vallarta, México

Jueves 4 de Julio

6:00	13:00	Traslados y Registro	Todos
13:00	15:00	Comida	Todos
15:00	15:30	Inauguración del Congreso ESGAL 2013	Manuel Borges/Alberto García
15:30	17:30	Actualización sobre protocolos de sincronización para la primer IA posparto	Jeff Stevenson
17:30	18:30	Prevalencia de <i>Leptospira borgpetersenii</i> serovariedad hardjo (tipo hardjo bovis) en México	Alberto García
21:00	22:00	Cena	Todos

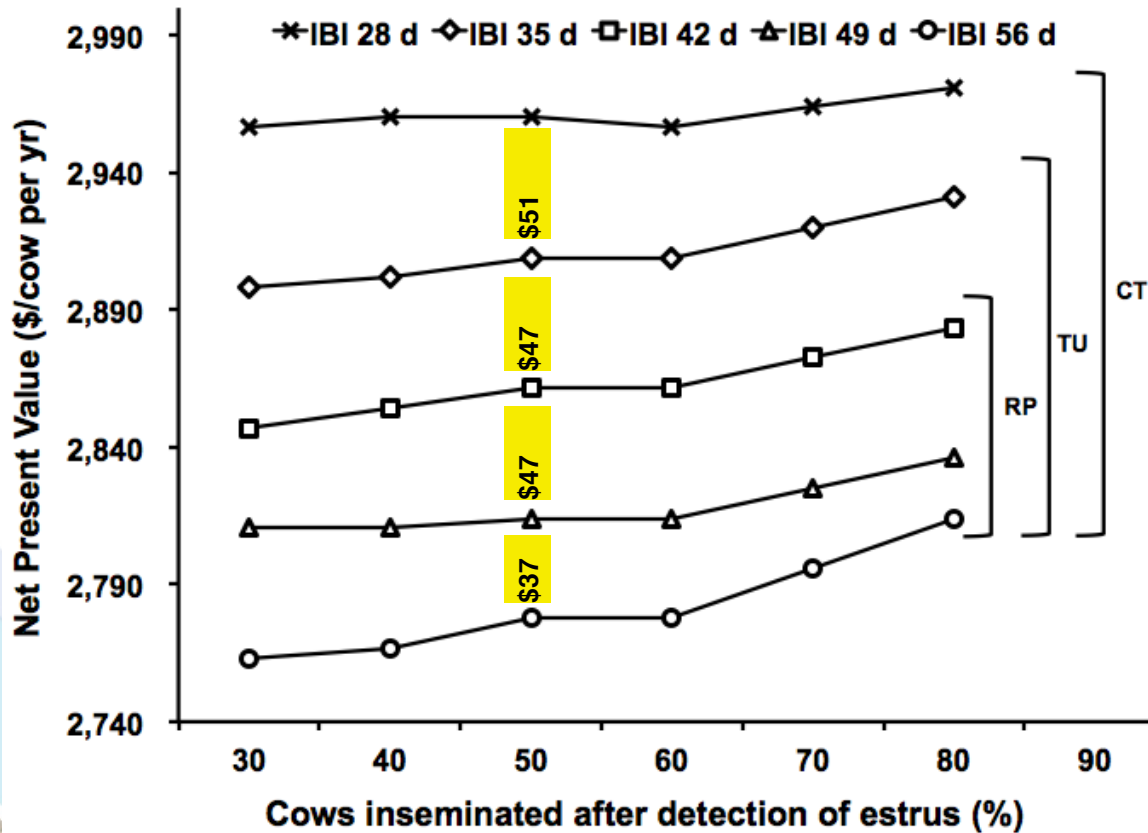
Viernes 5 de Julio

7:00	8:00	Desayuno	Todos
8:00	10:00	Impacto económico de la reproducción en los hatos lecheros	Victor Cabrera
10:00	11:00	Uso de vacunas activas modificadas en vacas frescas	Victor Cortese
11:00	11:15	Receso	Todos
11:15	12:45	Taller de protocolos de vacunación en ganado lechero	Victor Cortese
12:45	14:00	Comida	Todos
14:00	16:00	Prevención y tratamiento de mastitis durante el periodo fresco	Rodrigo Pedraza
16:00	18:00	¿Cómo alcanzar la felicidad?	Arturo Velasco
21:00	23:00	Clausura del Congreso ESGAL 2013 y cena con invitado sorpresa	Manuel Borges/Todos



Otra investigación

Efecto de



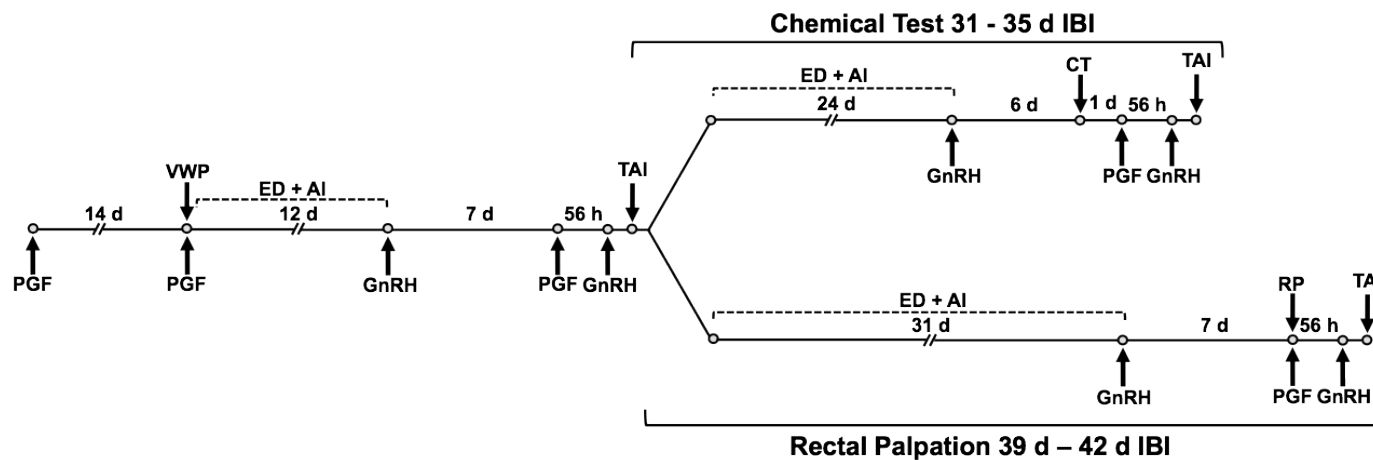
CT = Chemical test
TU = Transrectal ultrasound
RP = Rectal palpation



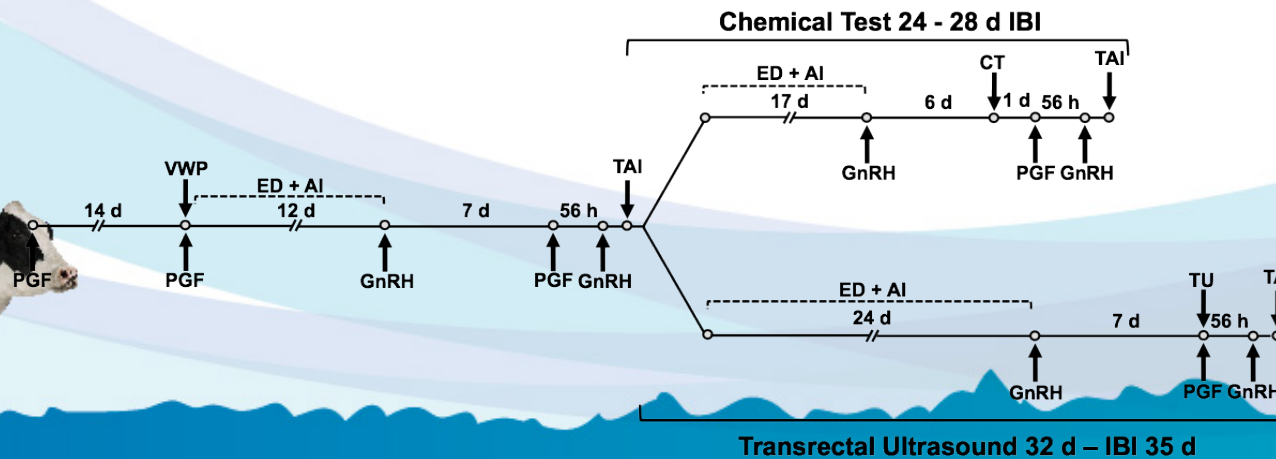
Experiment 2

Economic impact of using chemical tests for early pregnancy diagnosis

A

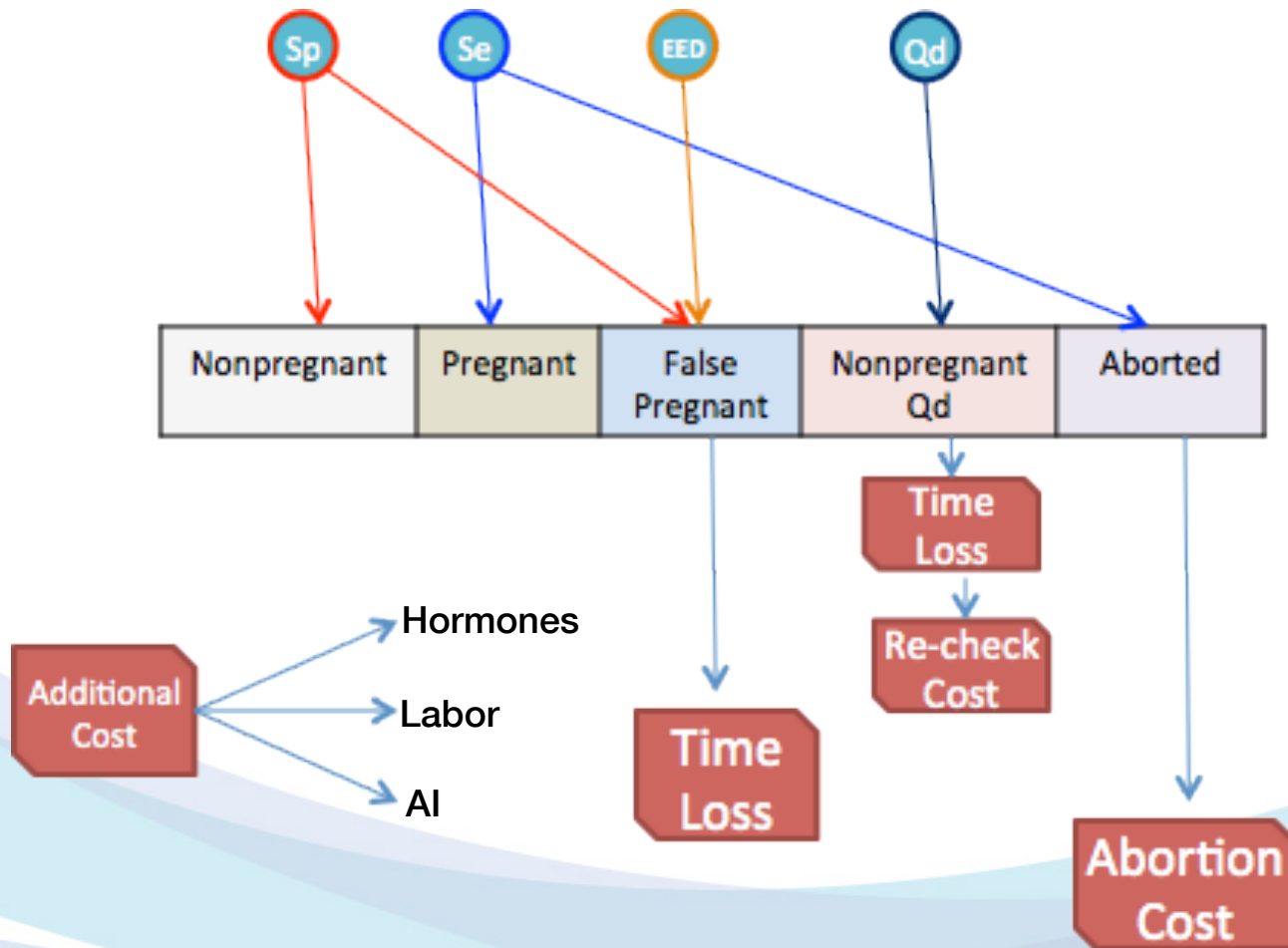


B



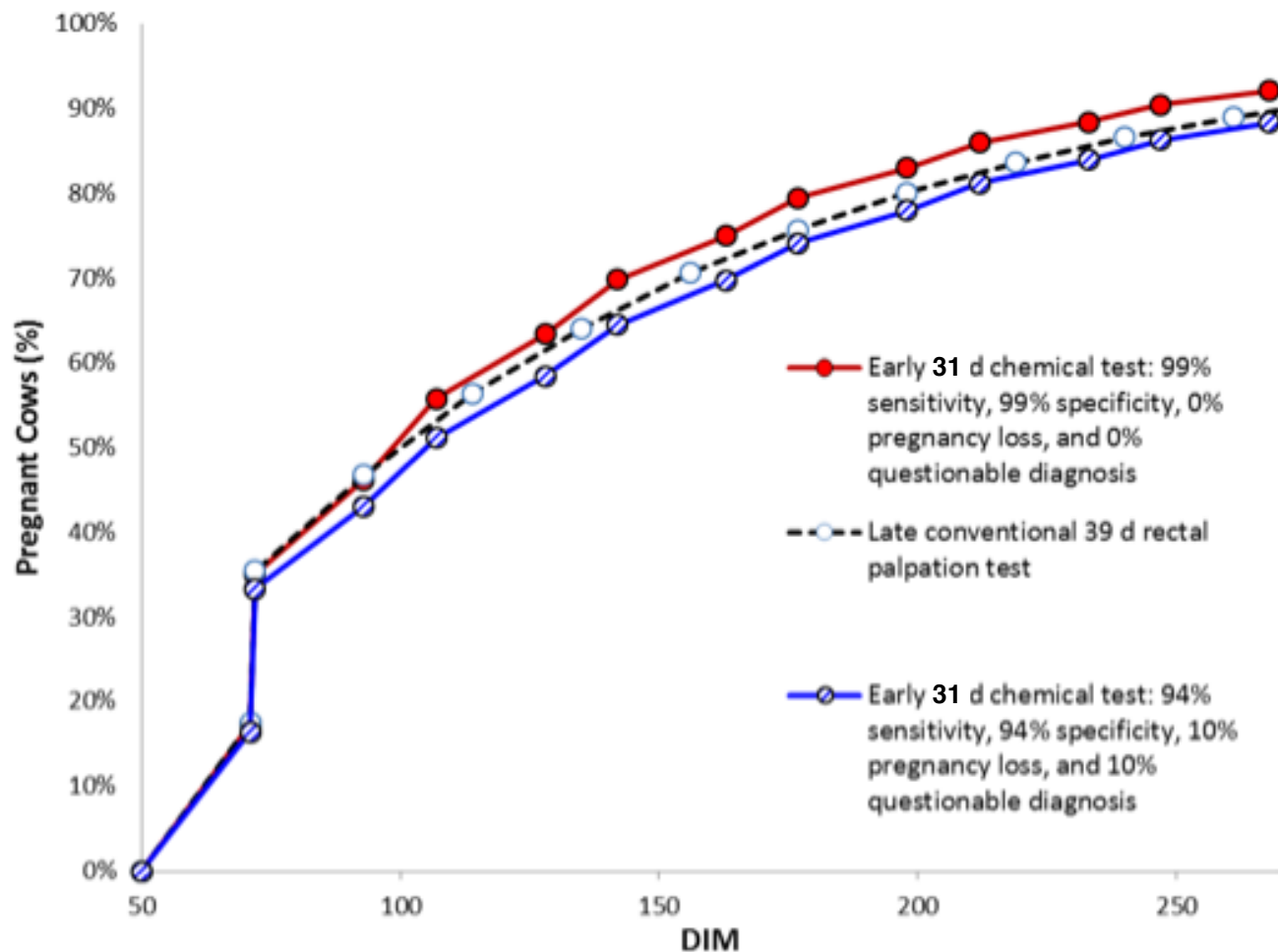
Experiment 2

Design



Experiment 2

Reproductive performance



Experiment 2

Economic performance, value of chemical test (CT)

% Sensitivity	98/97	94-99	+5.3	+4.5
% Specificity	98/97	94-99	+3.1	+2.5
% Pregnancy loss	6/6.6	0-10	-3.1	-2.5
% Questionable	3.3/8.5	0-10	-0.4	-0.3
% Estrous detection	50	30-80	0.097	-0.220
\$ CT cost	2.4	0.5-5	-0.0175	-0.0192

Experiment 2

Economic performance, breakeven of chemical test (CT)

% Sensitivity	96.4	94.9
% Specificity	95.1	93.2
% Pregnancy loss	8.9	10.5



Economic value of a dairy cow

A decision support tool



The Economic Value of a Dairy Cow

Victor E. Cabrera, Department of Dairy Science

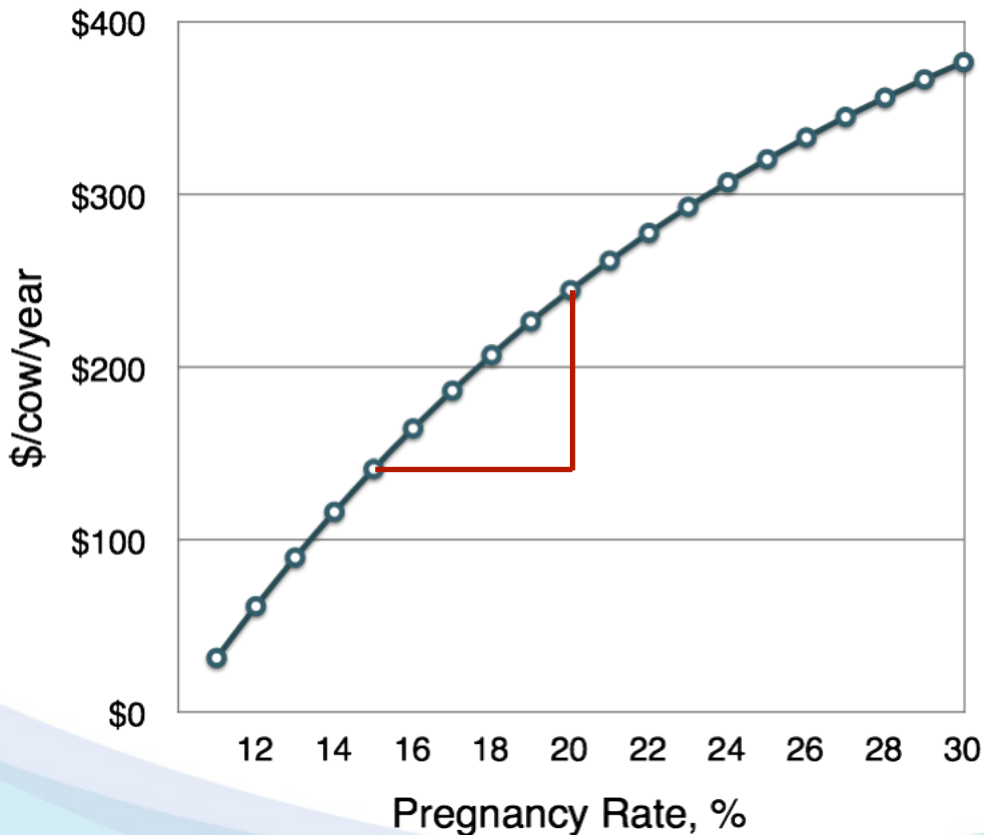


Overview	Single Cow Analysis	Herd Analysis
INPUTS - Edit Values in This Block		
Evaluated Cow Variables		
Current Lactation	3	↓
Current Months after Calving	5	↓
Current Months in Pregnancy	1	↓
Expected Milk Production Rest of Lactation, %	100	
Expected Milk Production Next Lactations, %	100	
Replacement Cow Variable		
Expected genetic improvement, % additional milk	0	
Herd Production and Reproduction Variables		
Herd Turnover Ratio, %/year	35	
Rolling Herd Average, lb/cow per year	24,000	↓
21-d Pregnancy Rate, %	18	↓
Reproduction Cost, \$/cow per month	20	
Last Month After Calving to Breed a Cow	10	↓
Do-not-Breed Cow Minimum Milk, lb/day	50	
Pregnancy Loss after 35 Days Pregnant, %	22.6	
Average Cow Body Weight, lb	1306	
Herd Economic Variables		
Replacement Cost, \$/cow	1300	
Salvage Value, \$/lb live weight	0.38	
Calf Value, \$/calf	100	
Milk Price, \$/cwt	16	
Milk Butterfat, %	3.5	
Feed Cost Lactating Cows, \$/lb dry matter	0.1	
Feed Cost Dry Cows, \$/lb dry matter	0.08	
Interest Rate, %/year	6	
<input type="button" value="Analyze"/>		
OUTPUTS - Interactive Results		
Value of the Cow, \$	628	
Compared Against a Replacement, \$		
Milk Sales, \$	148	
Feed Cost, \$	-157	
Calf Value, \$	26	
Non-reproductive Cull, \$	-126	
Mortality Cost, \$	-24	
Reproductive Cull, \$	12	
Reproduction Costs, \$	45	
Replacement Transaction, \$	704	
Herd Structure at Steady State		
Days in milk	224	
Days to Conception	122	
Percent of Pregnant	52	
Reproductive Culling, %	8	
Mortality, %	3	
1st Lactation, %	43	
2 nd Lactation, %	27	
> 3 rd Lactation, %	30	
Economics of an Average Cow, \$/year		
Net Return, \$	1998	
Milk Sales, \$	3834	
Feed Cost, \$	-1522	
Calf Sales, \$	60	
Non-Reprod. Culling Cost, \$	-198	
Mortality Cost, \$	-38	
Reproductive Culling Cost, \$	-59	
Reproductive Cost, \$	-80	



Value of improved reproductive performance

Law of diminishing returns



How much is the gain

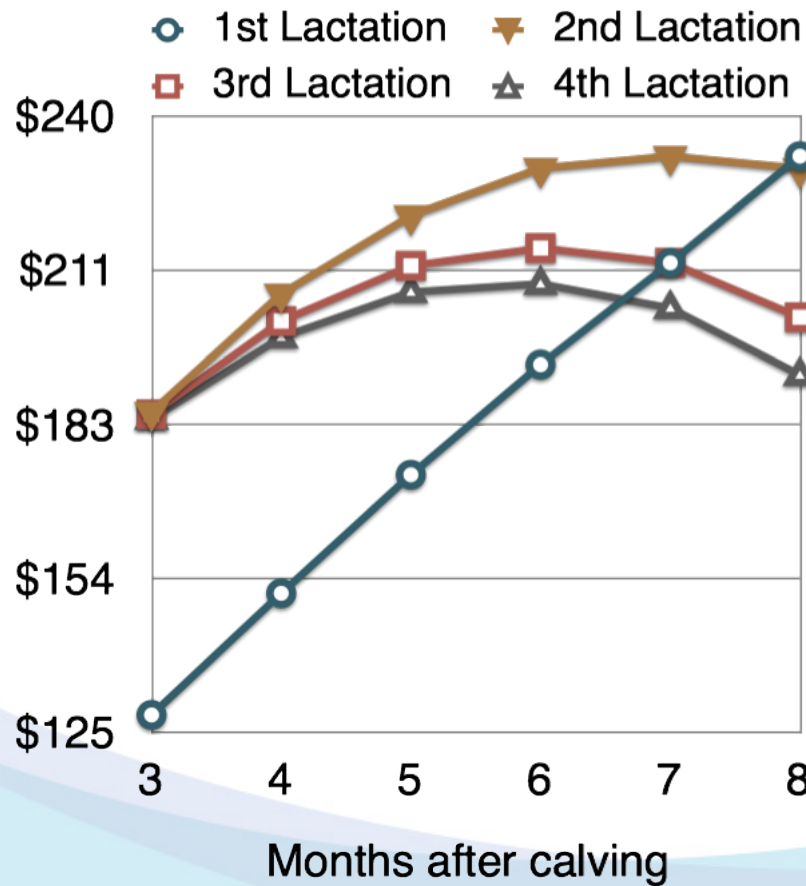
- Between \$32 and \$11 per cow per year

Net profit when increasing preg. rate from 15 to 20%

- \$103 per cow per year

Value of a new pregnancy

Important to have cows pregnant

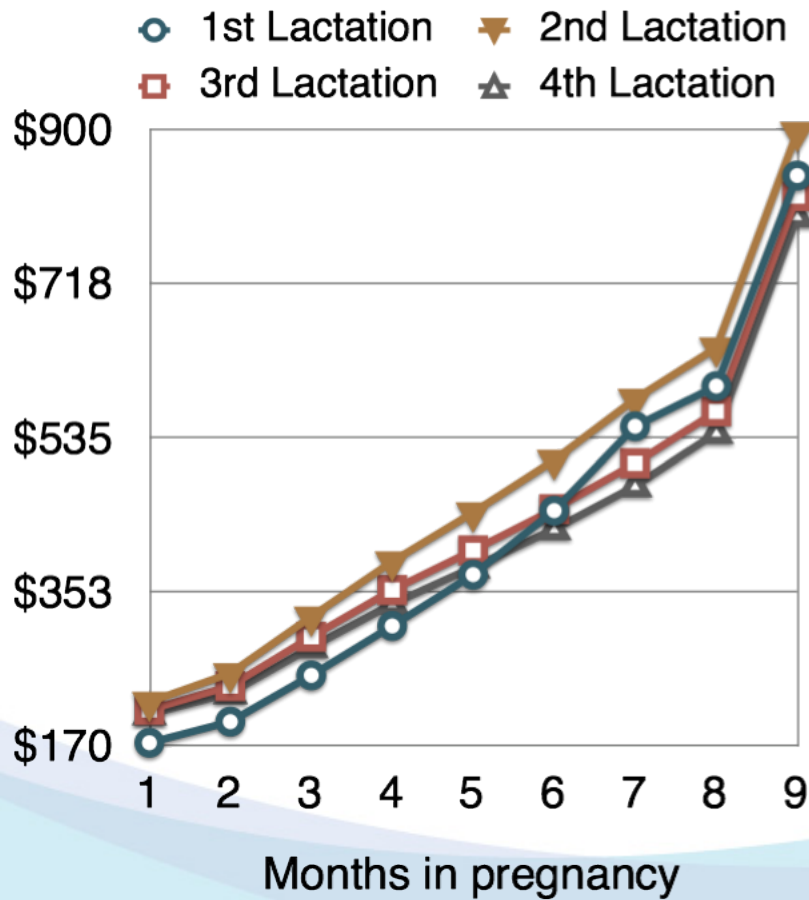


Cabrera, 2012



Cost of a pregnancy loss

Detect aborted cows as early as possible



Cabrera, 2012



Cost of a day open (\$/d)

Critical to have pregnant cows and detect non-pregnant cows as early as possible

1	-0.58	2.41	2.01	1.75
2	1.30	4.03	4.17	3.96
3	2.88	5.16	5.55	5.41
4	3.07	4.75	5.12	5.00
5	3.08	4.27	4.53	4.40
6	3.02	3.77	3.92	3.80
7	2.94	3.26	3.28	3.17
8	2.92	2.73	2.60	2.49
9	2.98	2.19	1.86	1.74
10	3.14	1.63	1.05	0.91

