



Valoración económica de programas reproductivos

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ECONOMÍA NUTRICIÓN Y MANEJO
Promoción y mejora de los beneficios de la explotación
lechera a través de la nutrición y la reproducción

Preñez vs. dinero

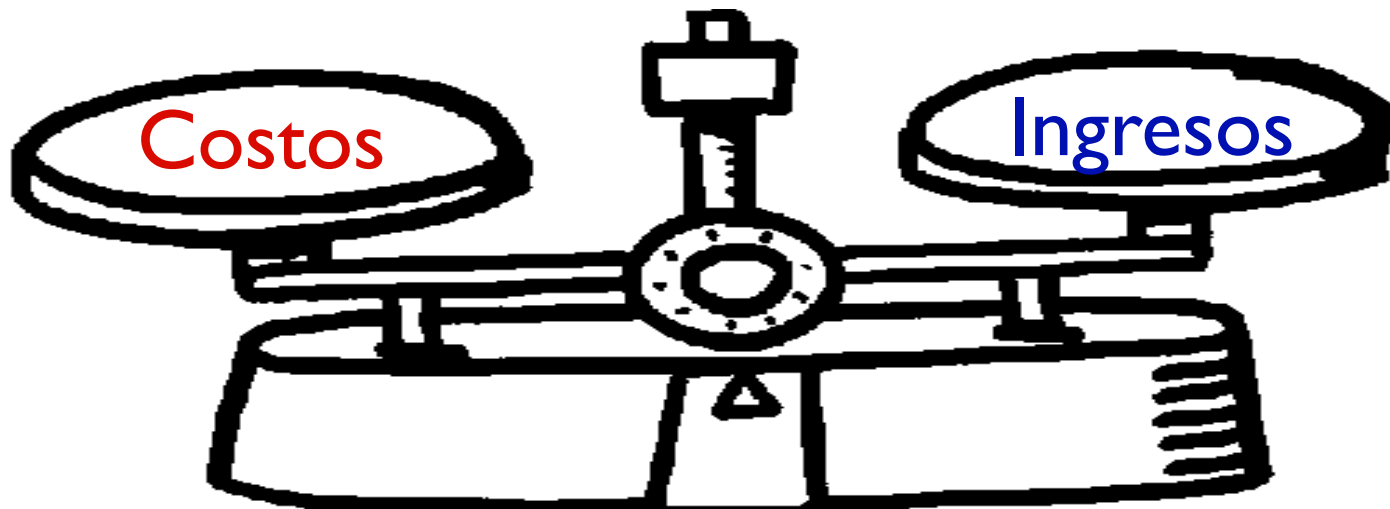
Trabajo

Semen

Hormonas

Leche

Terneros



Valor programas reproductivos

Retornos económicos

Complicado de calcular
Muchísimas variables
integradas



Más importante que el valor absoluto

Diferencia entre
escenarios

Específico para finca

Curvas de lactancia
Parámetros económicos
Condiciones de mercado

Valor neto (retorno, utilidad, ...)

Diferencia

Entradas de efectivo

Salidas de efectivo

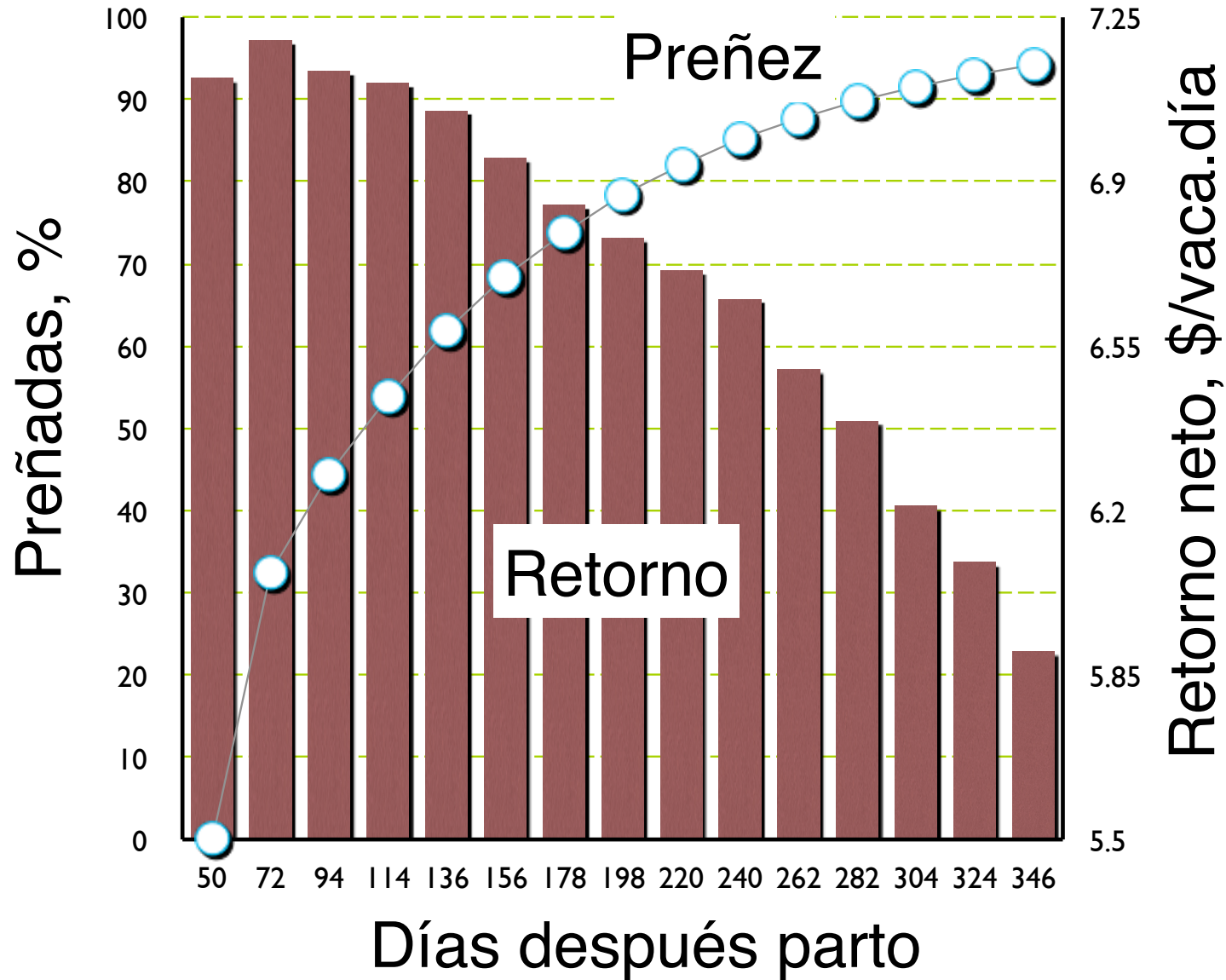


Dependientes de

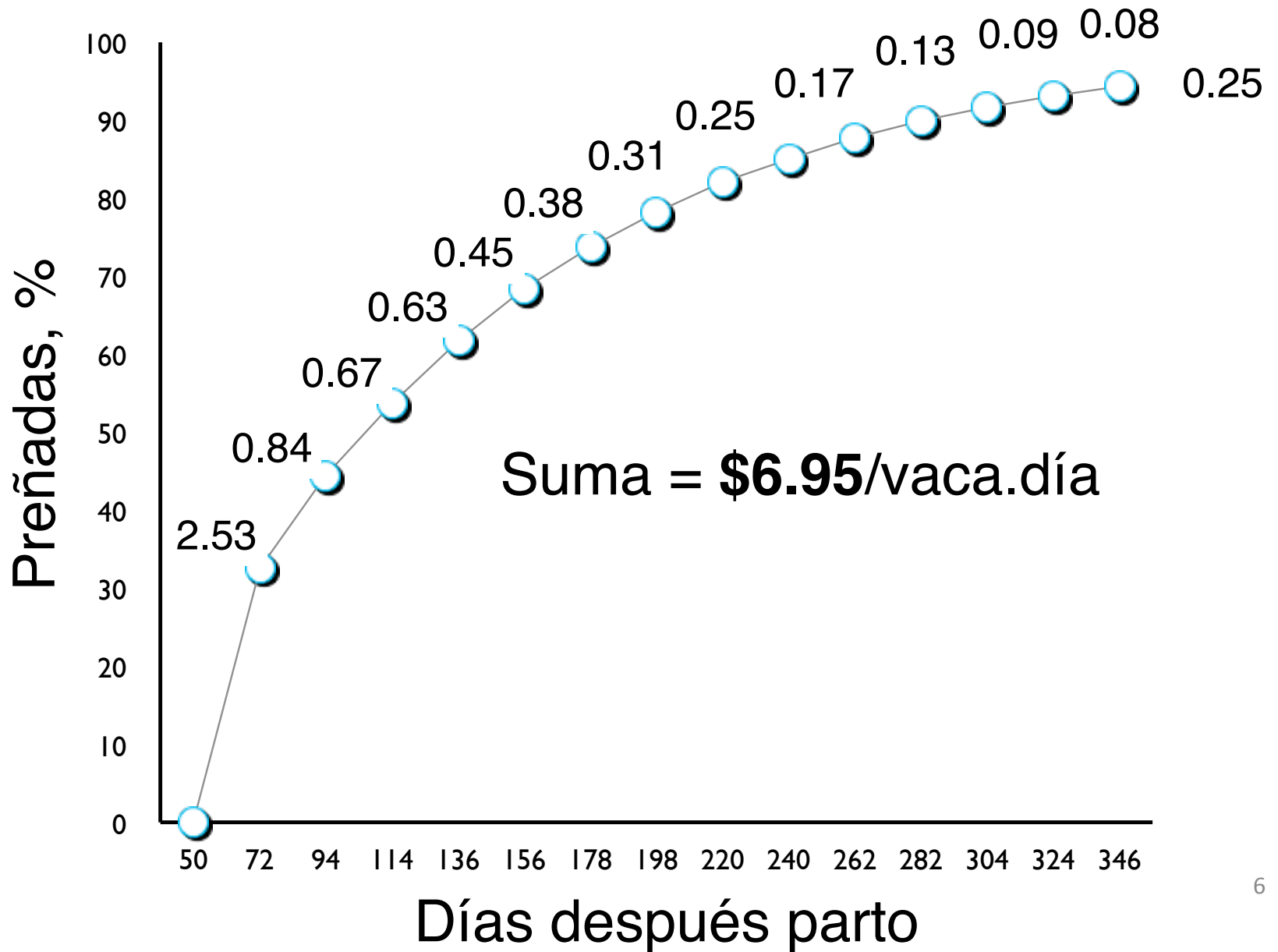
Manejos reproductivos

Mayoría de impactos incluidos

Reproducción vs. valor económico







Valorización sistemática



Wisconsin - Cornell Dairy Repro \$

Wisconsin-Cornell DairyRepro\$ (UWCURepro\$) 1.0

Herd Description | Reproduction | Results | About & Help



Cornell University
Department of Animal Science

Wisconsin-Cornell Dairy Repro\$
(UWCURepro\$)
Version 1.0.0.1

Developed By:
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Overview

Reproductive performance greatly impacts dairy farm profitability. Optimal reproductive performance improves milk productivity because cows take better advantage of the most productive part of their lactations, decreases replacement costs due to less reproductive failure, increases the number of offspring, and decreases reproductive costs per pregnancy. Normally, farmers and consultants can keep detailed records and compute meticulous reproductive costs. They can also know herd's reproductive performance. However, it is difficult to assess the actual monetary value of alternative reproductive programs. Therefore, in a multi-state collaboration, we have created the Wisconsin-Cornell Repro\$ (UW-CURepro\$) to assist dairy farm decision-makers perform advanced reproductive analyses by studying the economic value of intended reproductive management strategies. The UW-CURepro\$ is a complex daily Markov chain model inspired on Giordano et al., 2012 (J. Dairy Science 95:5442) that daily simulates every single cow and her economics, and computes the net return associated to reproductive performance parameters. Luckily, this tool has been designed as a user-friendly decision support tool and users only need to define: 1) productive, reproductive, and economic parameters to represent their own farm particular conditions and 2) potential reproductive strategies to be implemented. The decision support tool takes care of the rest!

[UWCU-DairyRepro\\$-Instructions.pdf](#)


Acknowledgments

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United States Department of Agriculture
National Institute of Food and Agriculture

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Ready

Wisconsin - Cornell Dairy Repro \$

Herramienta

Decisiones de manejo de programas reproductivos

Provee

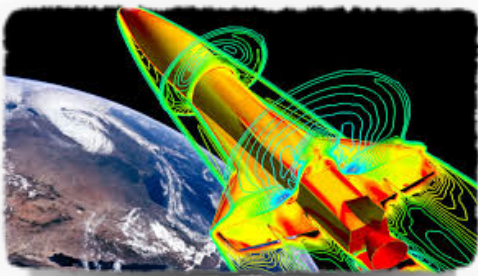
Valor económico de programas reproductivos:

- Específico para finca estudiada
- Proyecta posible cambios

Simula

El hato a través del tiempo

- Muestra cambios estructurales
- Calcula el valor económico
- Permite el mayor detalle al definir programas reproductivos



Describe el hato lechero

Parámetros del hato

Herd Parameters

Herd Size (#)	100
Average Body Weight (lb)	1,400
Involuntary Culling (%/yr)	35.0
Mortality Rate (%/yr)	4.0
Stillbirth (%)	4.9
Pregnancy Loss (%)	24.4

Parámetros económicos

Economic Parameters

Milk Price (\$/cwt)	16.00
Cost Feed Lactating (\$/lb DM)	0.08
Dry Period Fixed Cost (\$/lb DM)	0.06
Female Calf value(\$)	136
Male Calf value (\$)	50
Heifer Replacement Value(\$)	1,302
Salvage Value (\$/lb)	0.526

Describe las curvas de lactancia

Registros de producción

Niveles de referencia disponibles

Lactation Curves (lb/cow/test)

Own Farm Lactations (Enter/Edit NUMBERS Below)

Own Farm Lactations (Enter/Edit NUMBERS Below)

Lactations of approximately 18,000 lb milk/cow/year

Lactations of approximately 19,000 lb milk/cow/year

Lactations of approximately 20,000 lb milk/cow/year

Lactations of approximately 21,000 lb milk/cow/year

Lactations of approximately 22,000 lb milk/cow/year

Lactations of approximately 23,000 lb milk/cow/year

Lactations of approximately 24,000 lb milk/cow/year

Lactations of approximately 25,000 lb milk/cow/year

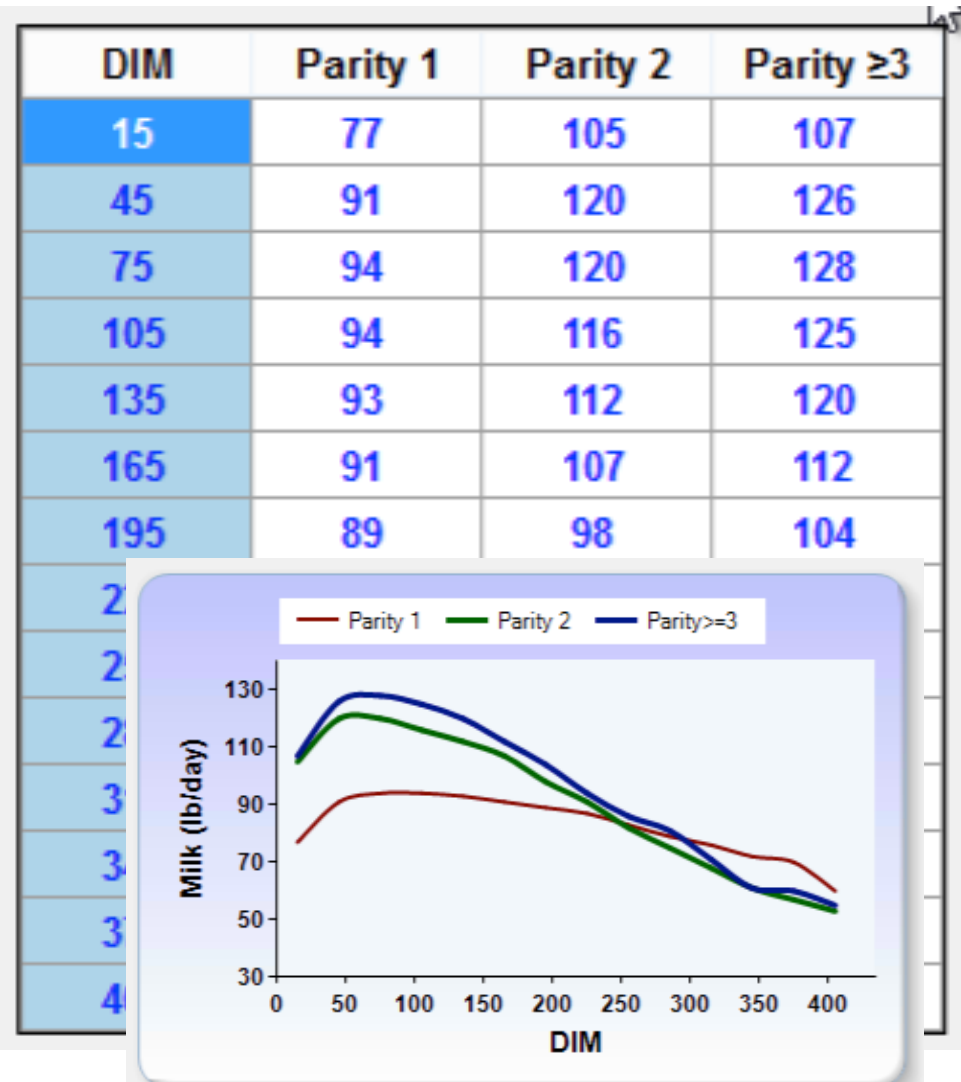
Lactations of approximately 26,000 lb milk/cow/year

Lactations of approximately 27,000 lb milk/cow/year

Lactations of approximately 28,000 lb milk/cow/year

Lactations of approximately 29,000 lb milk/cow/year

Lactations of approximately 30,000 lb milk/cow/year



Describe y define programs reproductivos

Siempre
contraste
entre

ACTUAL

y

ALTERNATIVO

<u>Reproductive Programs</u>		
	Current	Alternative
First AI postpartum	Presynch-Ovsynch-14	Presynch-Ovsynch-14
Second and sub. AI	Ovsynch	Ovsynch
Resynch before preg check	YES	YES
<u>Programs Description</u>		
VWP (d)	50	50
Estrous Cycle Duration (d)	22	22
Maximum DIM for Breeding	300	300
Do-not-Breed Minimum Milk (lb/d)	50	50
DIM first injection for first AI sync program (d)	36	36
Weekday first injection	Tuesday	Tuesday
Interbreeding interval for TAI services (d)	42	42
Heat bred before first TAI service (%)	0	80
CR heat bred before first TAI service (%)	0	25
CR first TAI service (%)	30	30
Heat bred after first TAI service (%)	0	60
CR heat bred after first TAI service (%)	0	33
CR second and subsequent TAI services (%)	28	28
<u>Pregnancy Diagnosis</u>		
Day in gestation first preg check (d)	39	39
Day in gestation second preg check (d)	67	67
Day in gestation third preg check (d)	221	221

Eficiencia esperada de referencia

Fertilidad esperada al primer servicio de tiempo fijo

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)

Modificado de Giordano et al., 2012

Eficiencia esperada de referencia

Fertilidad esperada a los siguientes servicios de tiempo fijo

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)

Define costos de programas

Tienes los costos totales de reproducción?

Cost of Reproductive Programs

Do you know total breeding costs(AI, hormones, and labor for injections? If YES Check box

Inseminación

<u>Insemination Cost</u>	Current	Alternative
Semen (\$/cow)	5.0	5.0
Labor (\$/cow)	5.0	5.0

Hormonas

<u>Synchronization</u>		
Labor for injection	15.0	15.0
<u>Hormones</u>		
GnRH (\$/dose)	2.6	2.6
PGF (\$/dose)	2.3	2.3
CIDR (\$/Unit)	10.0	10.0
hCG (\$/dose)	3.5	3.5

Diagnóstico de preñez

<u>Preg check</u>	Current	Alternative
Palpation (\$/hr)	105.0	105.0
Ultrasound (\$/hr)	0.0	0.0
Blood Test (\$/cow)	0.0	0.0

Define costos de programas

Detección visual de estrus

Detection of Estrus

Visual Observation

Laborers (#)	0	0
hr/d	0.0	0.0
Labor (\$/h)	0.0	0.0

Uso de monitores

Activity monitors for Heat Detection

System cost (\$)	0	0
Monitors (#)	0	0
Cost per monitor (\$)	0.0	0.0
Maintenance (\$/yr)	0.0	0.0
Life expectancy (yr)	0.0	0.0
Salvage value (%)	0	0

Define costos de programas

Labor requerida día a día

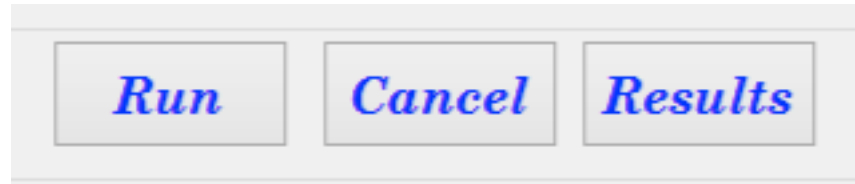
Labor Required for Injections and Pregnancy Diagnosis

Reset default values to zero

Current	Injections	Desc	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
		Laborers	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
		Hours/d	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0
	# Cows	0.0	36.0	0.0	52.0	0.0	0.0	0.0	0.0	
Pregnancy Diagnosis	Hours/d	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	
	# Cows	0.0	36.0	0.0	52.0	0.0	0.0	0.0	0.0	

Alternative	Injections	Desc	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
		Laborers	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0
		Hours/d	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0
	# Cows	0.0	36.0	0.0	52.0	0.0	0.0	0.0	0.0	
Pregnancy Diagnosis	Hours/d	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	
	# Cows	0.0	36.0	0.0	52.0	0.0	0.0	0.0	0.0	

Corre un análisis

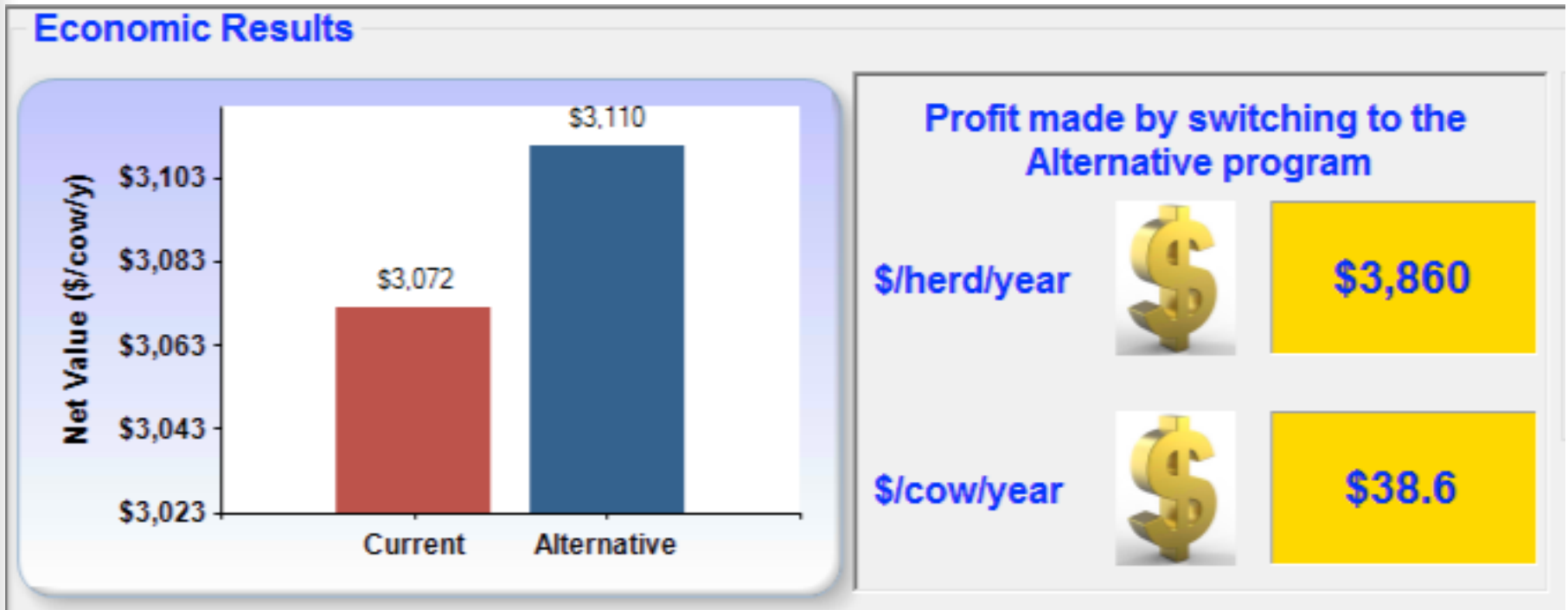


Dependiendo de los procesadores

Entre 2 y 10 minutos

Estudia los resultados

Resultados económicos generales



Programa alternativo es **\$38.6/vaca.año** mejor

Estudia los resultados

Resultados económicos desagregados

Contribution to Net Value

Item	Current	Alternative	Diff
Total Net Value (\$/cow/y)	3,071.8	3,110.4	38.6
IOFC (\$/cow/y)	3,266.8	3,280.7	13.9
Replacement Cost (\$/cow/y)	-191.0	-183.9	7.1
Reproductive Cost (\$/cow/y)	-41.3	-27.6	13.7
Calf Value (\$/cow/y)	37.3	41.2	3.9

Programa alternativo:

- Mayor ingreso sobre costos de alimentación
- Menor costos de reemplazo
- Menor costo reproductivo
- Mayor valor de terneras

Estudia los resultados

Estructura del hato de acuerdo a reproducción

Cows Leaving the Herd

Item	Current	Alternative	Diff
Total Culling (%)	41.2	39	-2.2
Non-Reproductive Culling (%)	26.3	25.3	-1
Mortality (%)	4.1	3.9	-0.2
Reproductive Culling (%)	10.8	9.8	-1

Menos
descartes y
mortalidad

Relación entre
necesidad y
disponibilidad de
reemplazos

Heifer Supply and Demand

Item	Current	Alternative
Heifer Supply (% of herd/year)	40.9	41.4
Heifer Demand (% of herd/ye...	41.2	39.1
Heifer Balance	-0.3	2.3

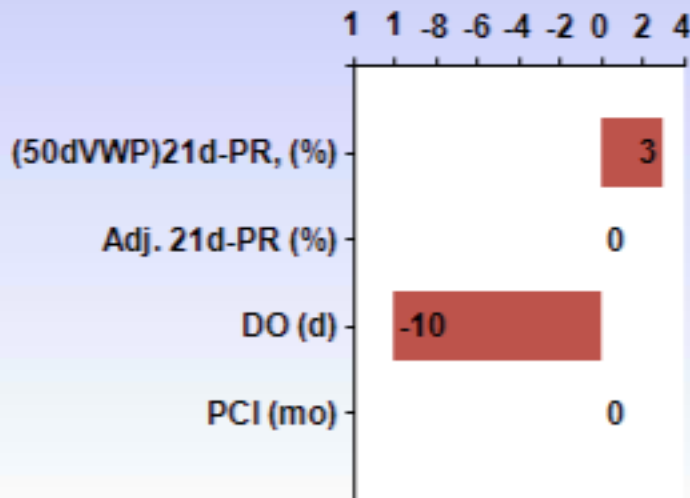
Mejor balance con alternativo

Estudia los resultados

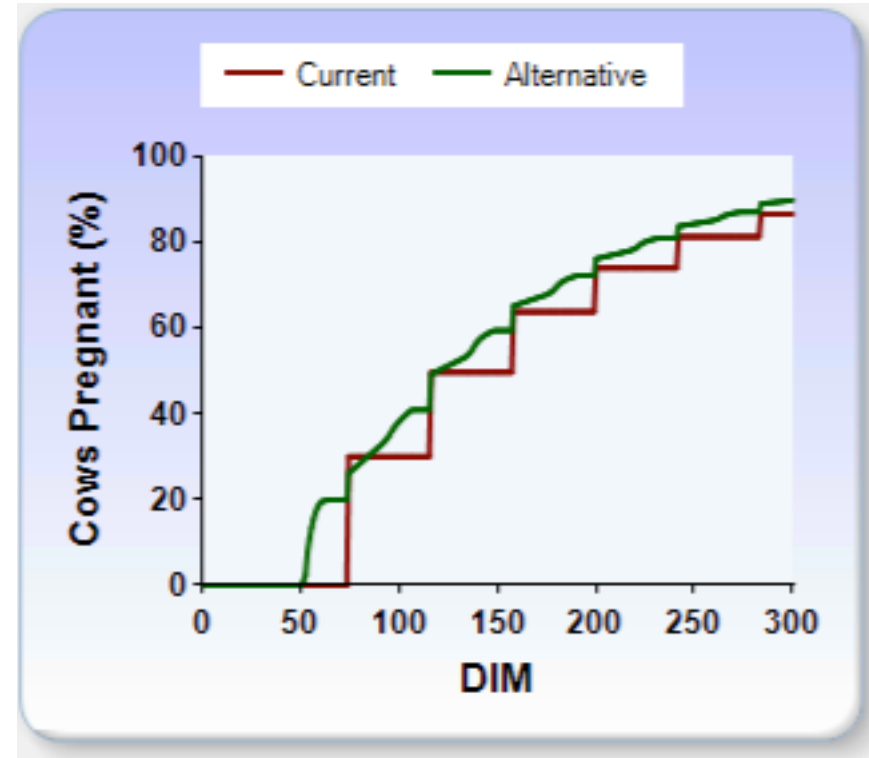
Parámetros importantes de reproducción

Reproductive Performance

Expected change by switching to the Alternative program



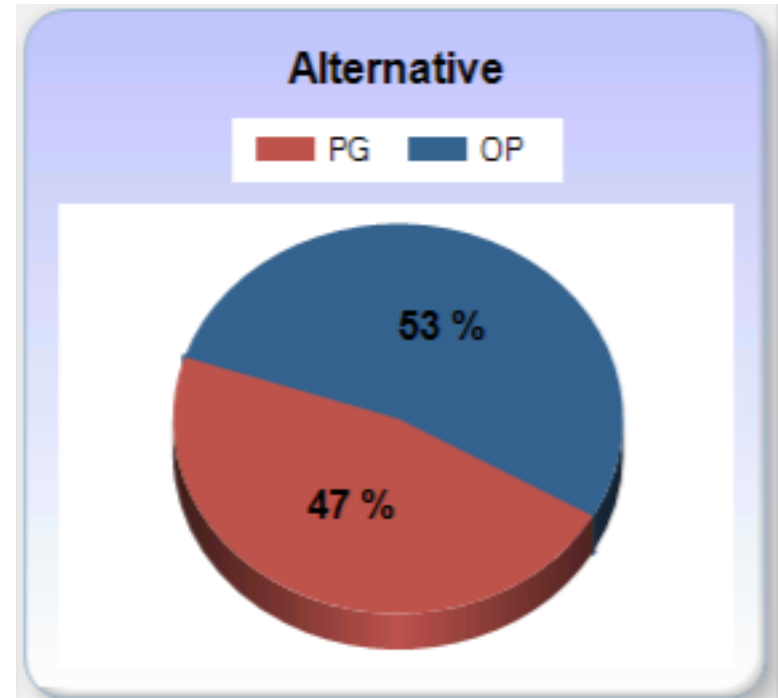
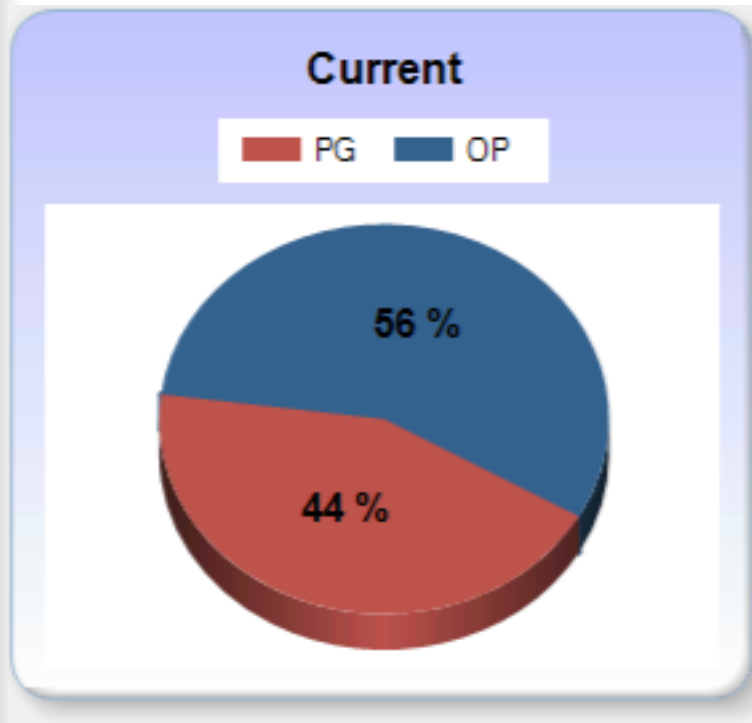
Menos período de espera voluntaria y días abiertos



Curvas de sobrevivencia de programas
Muestra momentos en cuales vacas quedan preñadas

Estudia los resultados

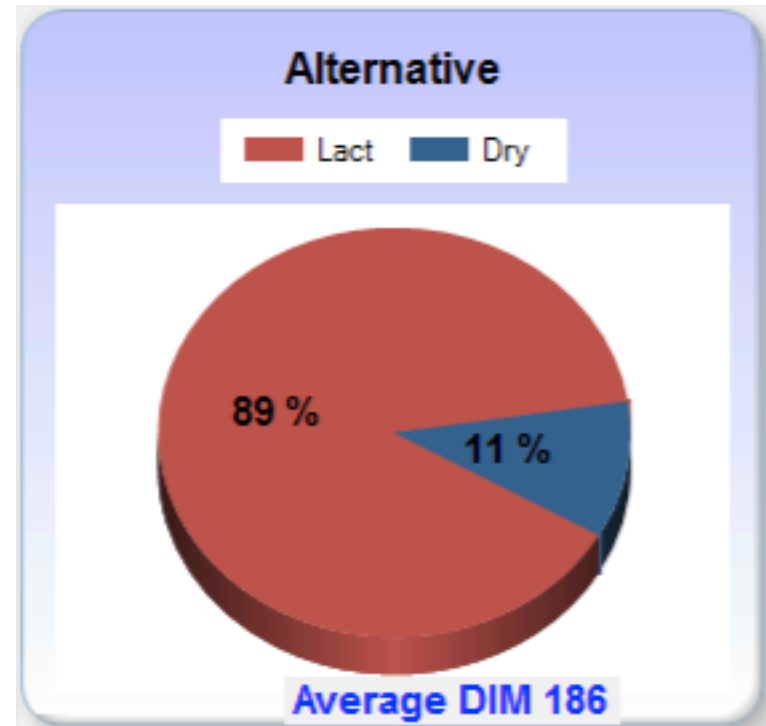
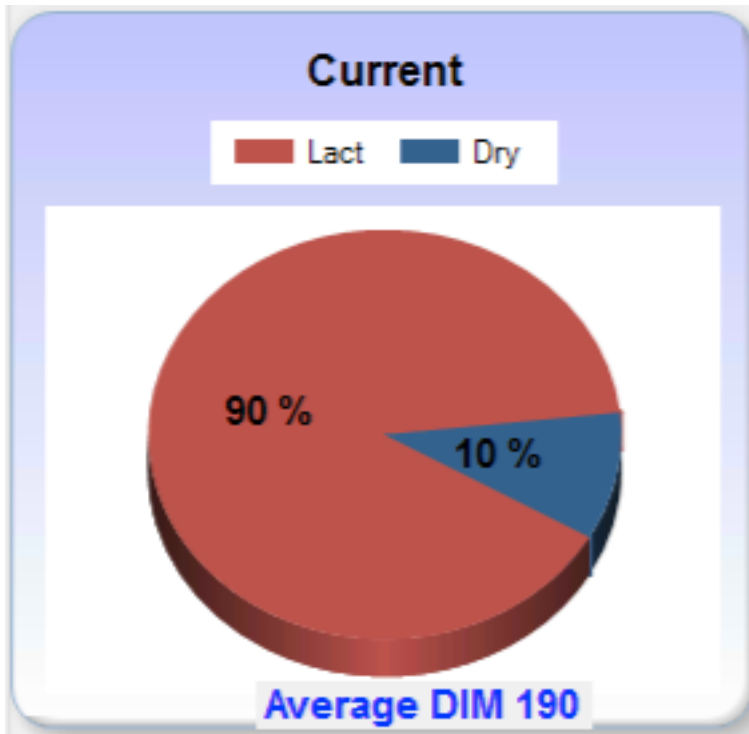
Distribución de vacas de acuerdo a su estadio de preñez



Programa alternativo tiene 3% mas de vacas preñadas

Estudia los resultados

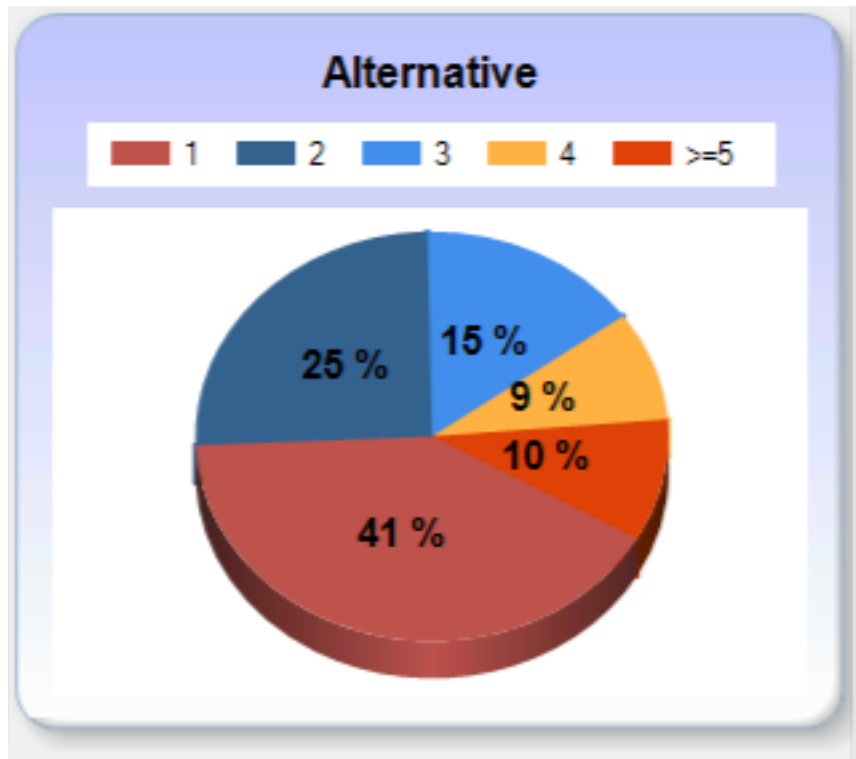
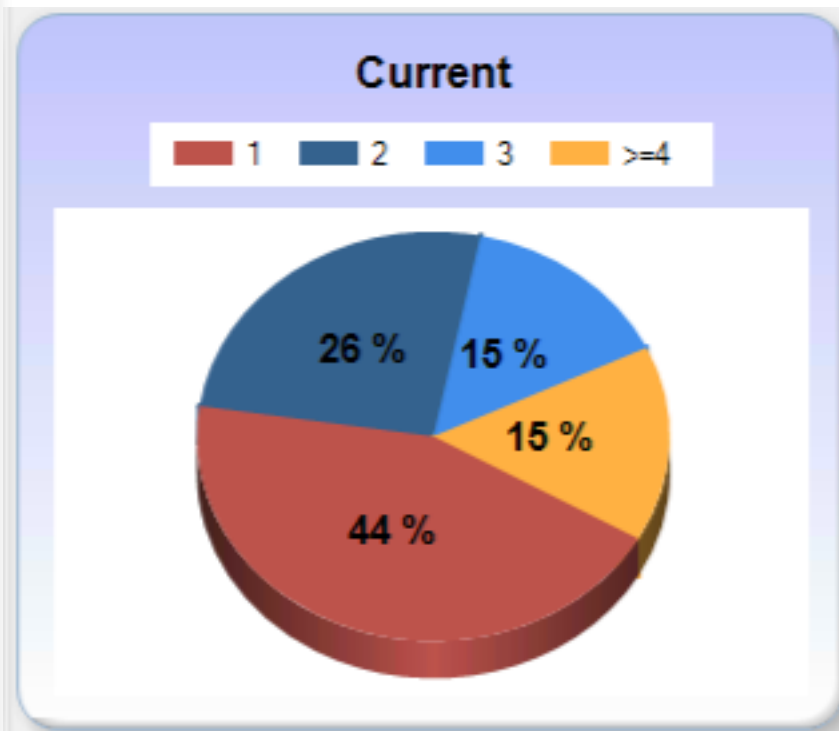
Distribución de vacas de acuerdo a su estadio de producción



Programa alternativo tiene 1% mas de vacas secas

Estudia los resultados

Distribución de vacas de acuerdo a su lactancia



Programa alternativo tiene 3% menos de vacas en primera lactancia

Documentación asociada

Manual de instrucción y documentación



Cornell University
Department of Animal Science

UWCU-DairyRepro\$: A Reproductive Programs Economic Analysis Tool

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Available at:

University of Wisconsin: DairyMGT.info : Tools : Reproduction

Cornell University: <http://www.ansci.cornell.edu/dm/resources.html>

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A daily herd Markov-chain model to study the reproductive and economic impact of reproductive programs combining timed artificial insemination and estrus detection

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Thanks