



LW
Extension



El Valor Económico de Mejorar la Tasa de Preñez de 21 días

Victor E. Cabrera

Introducción

- Productores no saben el valor de mejorar la tasa de preñez de 21 días

Introducción

- Valor económico de la tasa de preñez de 21 días es específico para cada tambo



- Productores no saben el valor de mejorar la tasa de preñez de 21 días

Introducción

- Valor económico depende de las condiciones de mercado

Ingresos con 0,75 \$/l

Leche	1938
Hacienda	104
Total	2042

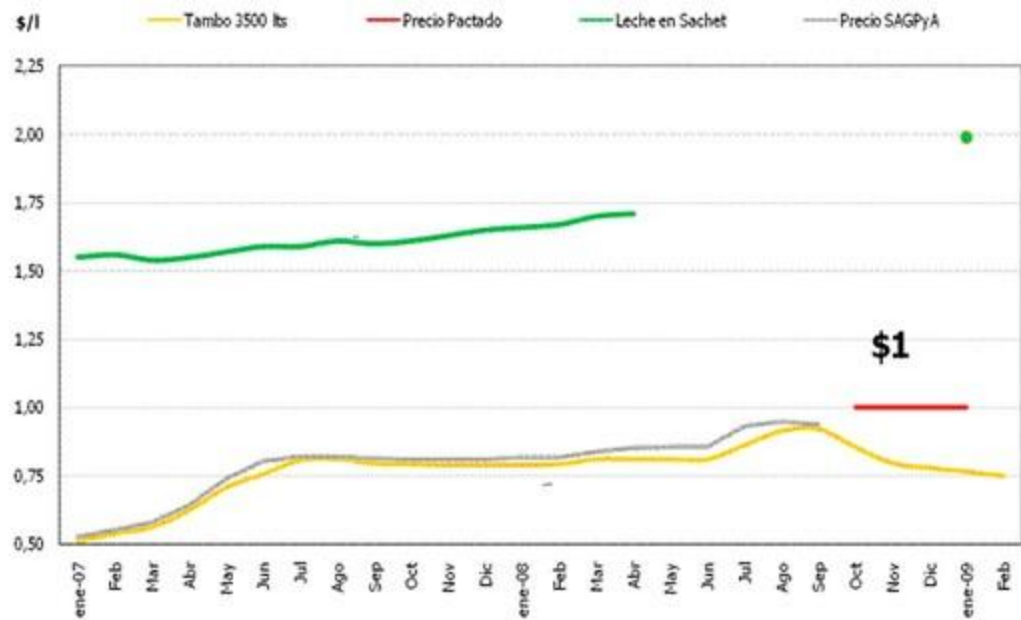
Gastos variables

Alimentación	1256
Personal	155
Ordeño	80
Mejoramiento	17
Sanidad	43
Guachera	101
Recria	335
Total	1987

Margen Bruto 55

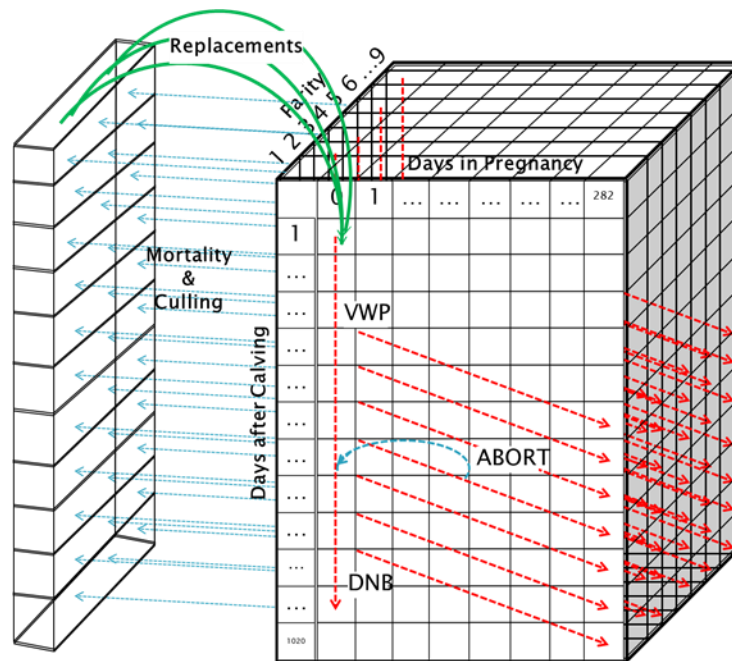
Gastos de administración y estructura	200
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Resultado final -145



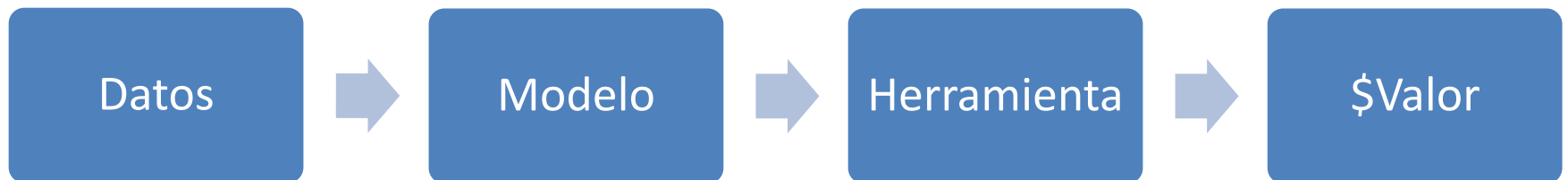
Enfoque

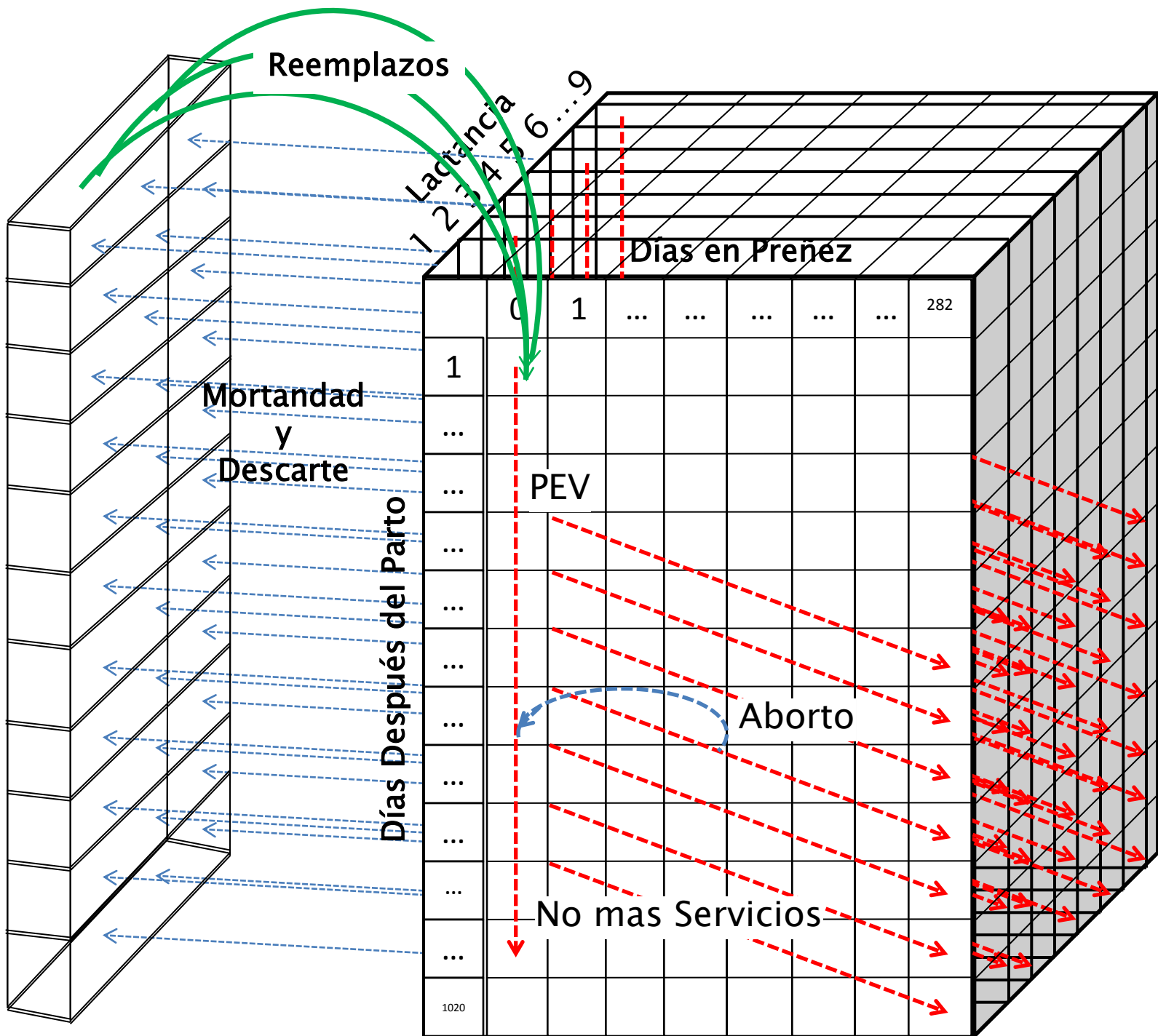
- Predecir la estructura del hato resultante de una tasa de preñez de 21 días



Objetivo

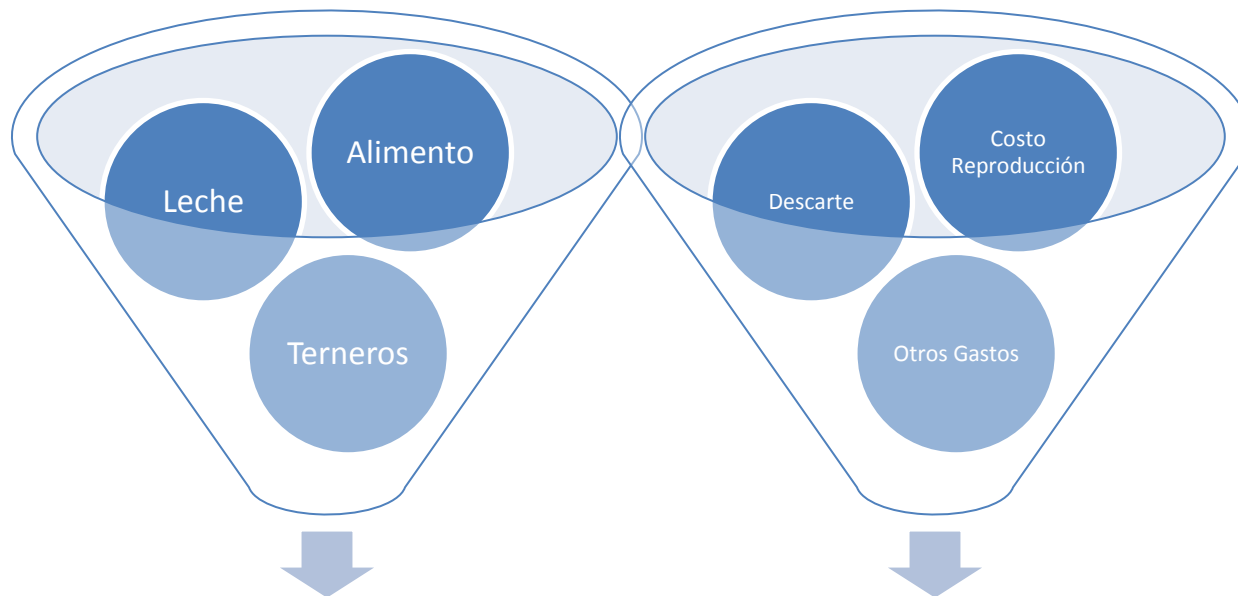
- Desarrollar una herramienta de decisión para evaluar el valor económico de cambios en la tasa de preñez de 21 días





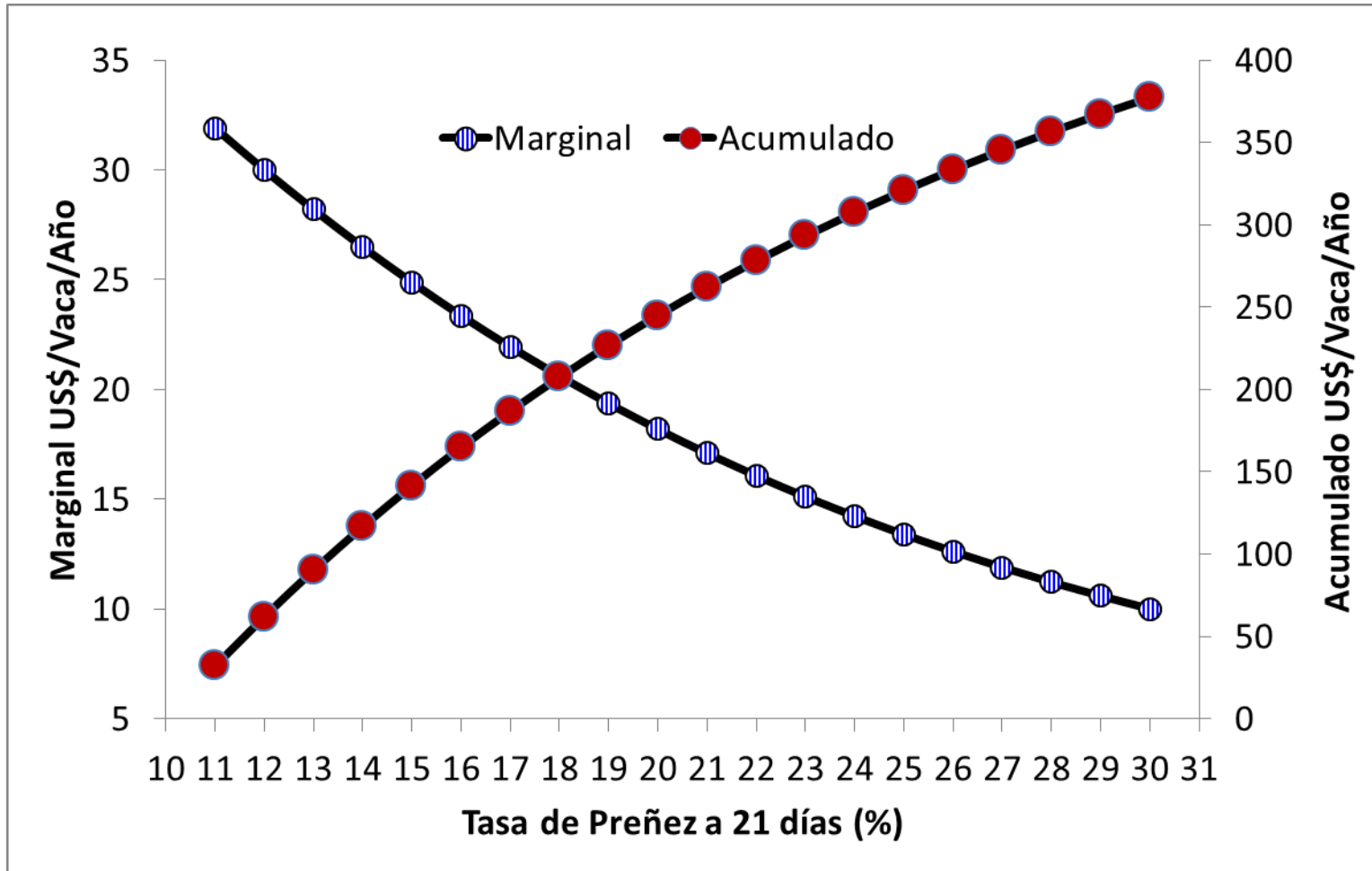
Enfoque

- Agregar el valor económico de todos los animales (o proporciones de animales en el hato)



\$ Valor de la Tasa de Preñez de 21 Días

Algunos Resultados

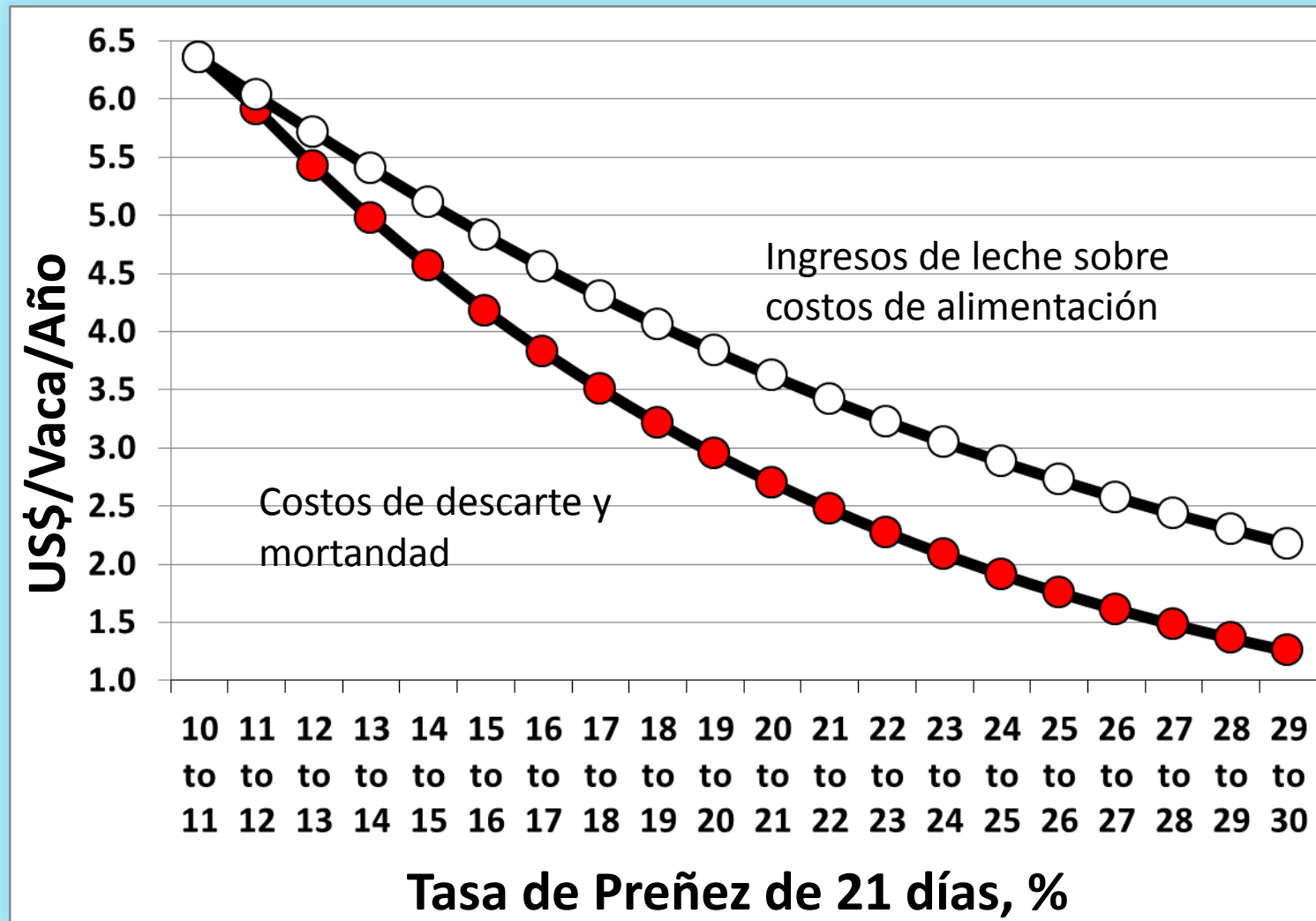


Algunos Resultados

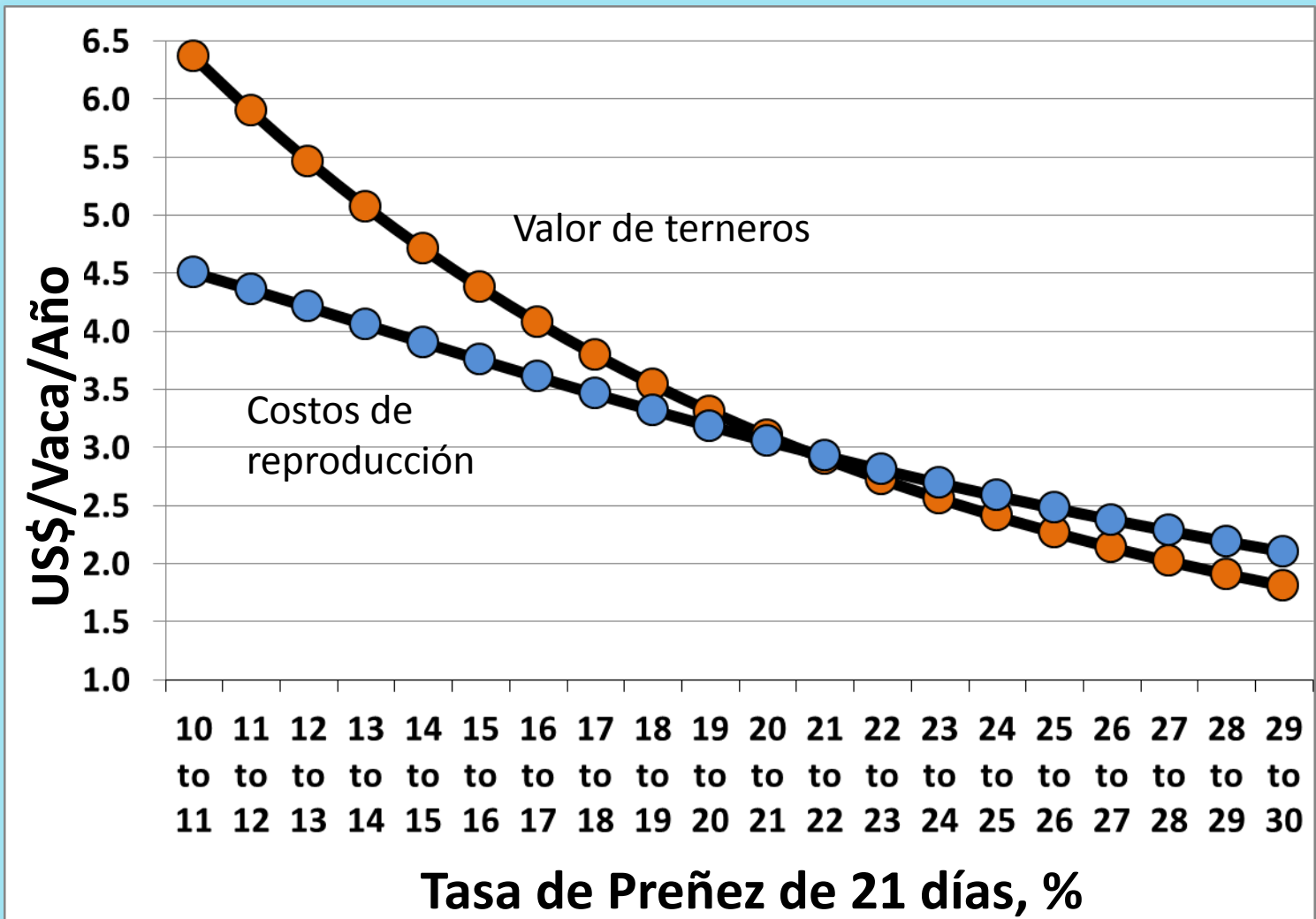
		ACTUAL Tasa de Preñez de 21 días (%)																				
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
GOL Tasa de Preñez de 21 días (%)	11	32																				
	12	62	30																			
	13	90	58	28																		
	14	117	85	55	26																	
	15	141	110	80	51	25																
	16	165	133	103	75	48	23															
	17	187	155	125	97	70	45	22														
	18	207	176	145	117	91	66	43	21													
	19	227	195	165	137	110	85	62	40	19												
	20	245	213	183	155	128	103	80	58	38	18											
	21	262	230	200	172	145	121	97	75	55	35	17										
	22	278	246	216	188	162	137	113	91	71	51	33	16									
	23	293	261	231	203	177	152	128	106	86	66	48	31	15								
	24	307	276	246	217	191	166	143	121	100	81	62	45	29	14							
	25	321	289	259	231	204	179	156	134	113	94	76	59	43	28	13						
	26	333	302	272	243	217	192	169	147	126	107	89	71	55	40	26	13					
	27	345	313	283	255	229	204	181	159	138	119	100	83	67	52	38	25	12				
	28	357	325	295	266	240	215	192	170	149	130	112	95	78	63	49	36	23	11			
	29	367	335	305	277	251	226	202	180	160	140	122	105	89	74	60	46	34	22	11		
	30	377	345	315	287	261	236	212	190	170	150	132	115	99	84	70	56	44	32	21	10	

Valor(US\$/Vaca/Ano) de Mejorar Preñez

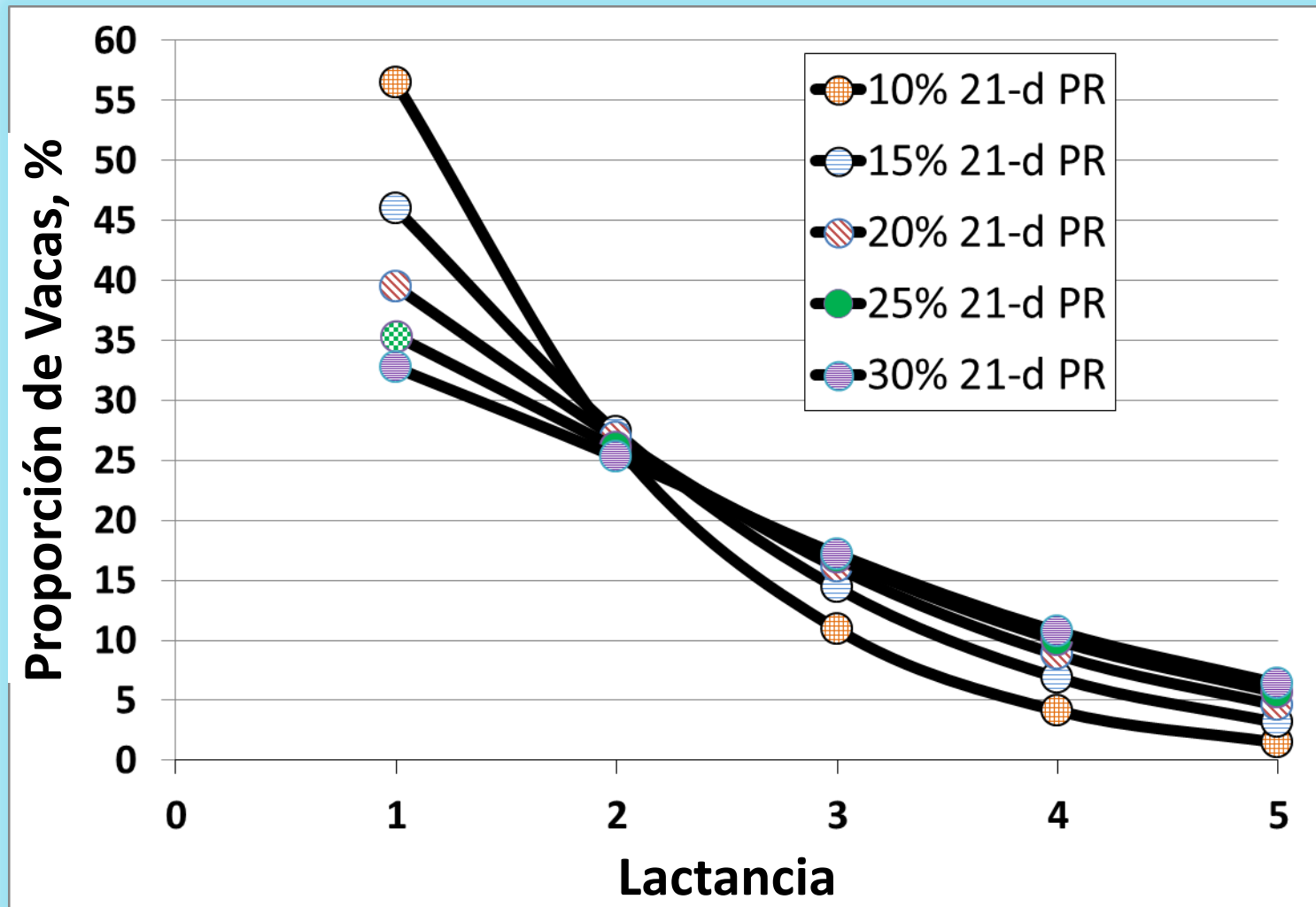
Factores mas Importantes



Factores mas Importantes



Consideraciones Adicionales



Herramienta de Decisión

Dairy Reproductive Economic Analysis

V.E. Cabrera

 United States Department of Agriculture

 National Institute of Food and Agriculture

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:

$$\text{Value of Reproductive Program} = \text{Income Over Feed Cost} + \text{Culling Cost} + \text{Mortality Cost} + \text{Income from Newborn} + \text{Reproductive Program Cost}$$

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

Herramienta de Decisión

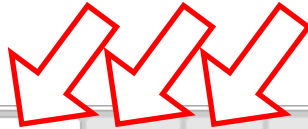
Overview Upload Repro Abort Milk Economics Run Model Results Analyze

Download Parameter Excel File
Download Parameters File

Upload Parameters as Excel File
Upload the Excel File: Choose File No file chosen Upload

Current File/Data Status
Using Data from Default Parameters File on Server

Herramienta de Decisión



Overview	Upload	Repro	Abort	Cull	Milk	Economics	Run Model	Results	Analyze
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Month in Milk	Lactation 1		Lactation 2		Lactation 3		Lactation 4		Lactation 5		Lactation 6		Lactation 7		Lactation 8		Lactation 9	
	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo	Preg Per Month (%/mo)	Cost Per Month \$/cow/mo
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
3	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
4	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
5	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
6	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
7	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
8	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
9	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
10	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
11	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25	18	25
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Decision Criteria for Reproductive Failure Culling

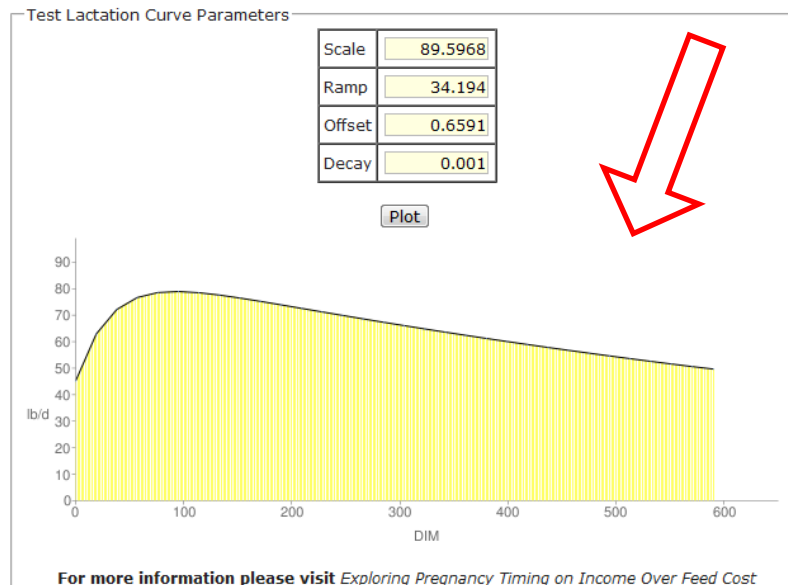
Month in lactation (threshold) to stop reproductive services (MIM)	11
Minimum amount of milk (threshold) produced (lb/cow/day)	50

Herramienta de Decisión

Overview Upload Repro Abort Cull Milk Economics Run Model Results Analyze

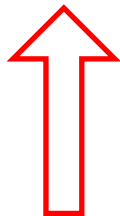
MilkBot Lactation Curves Parameters by Lactation <i>Milkbot</i>				
	a=Scale	b=Ramp	c=Offset	d=Decay
Lactation 1	66.4242290	14.6841	-2.4854	0.001005
Lactation 2	107.669823	16.2648	0.0147	0.001757
Lactation 3	132.005066	23.2079	2.5848	0.001922
Lactation 4	132.005066	23.2079	2.5848	0.001922
Lactation 5	132.005066	23.2079	2.5848	0.001922
Lactation 6	132.005066	23.2079	2.5848	0.001922
Lactation 7	132.005066	23.2079	2.5848	0.001922
Lactation 8	132.005066	23.2079	2.5848	0.001922
Lactation 9	132.005066	23.2079	2.5848	0.001922

Month in Pregnancy	Decrease in Milk
1	0
2	0
3	0
4	0
5	5
6	10
7	15
8	30
9	45



Herramienta de Decisión

Overview	Upload	Repro	Abort	Cull	Milk	Economics	Run Model	Results	Analyze
Parameters									
Body Weight of Lactating Cows	<input type="text" value="1400"/>	lb/animal	<i>Average Weight of Lactating Animals</i>						
Milk FAT Content	<input type="text" value="3.5"/>	%	<i>Average Butterfat on Milk</i>						
Milk Price	<input type="text" value="0.15"/>	\$/lb milk	<i>Average Price Received</i>						
Feed Price	<input type="text" value="0.1"/>	\$/lb feed	<i>Average Price Received</i>						
Heifer Replacement Value	<input type="text" value="1200"/>	\$/heifer	<i>Average Price paid for Pregnant Heifer</i>						
Salvage Value of Culling Animal	<input type="text" value="600"/>	\$/cow	<i>Average Value Received for culled cow</i>						
Born Calf Price	<input type="text" value="200"/>	\$/animal	<i>Average Value of Newborn</i>						
Time for Dry-Off	<input type="text" value="7"/>	months	<i>Cow will not produce after N months</i>						



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

Number of Cows *Lactating & Dry*

Run Model

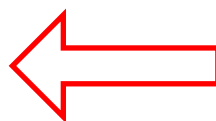


Dr. Victor E. Cabrera
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UW-Extension, University of Wisconsin-Madison
[DairyMGT](#)

Herramienta de Decisión

Overview Upload Repro Abort Cull Milk Economics Run Model Results Analyze

Total Number of Cows	100
Iterations Performed	737
Reached Steady State	YES

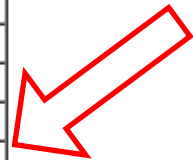
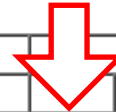


	Total Revenues & Costs				
	IOFC	Cull	Repro	Calves	Net Return
\$/herd/month	15128.81	-1353.02	-932.8	1048.08	13891.07
\$/herd/day	504.29	-45.1	-31.09	34.94	463.04
\$/cow/year	1840.67	-164.62	-113.49	127.52	1690.08



Herramienta de Decisión

Month in Milk	Month in Pregnancy										Revenues & Costs (\$)				
	0	1	2	3	4	5	6	7	8	9	Cull Cows	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.

Una Investigación

A Daily Herd Markov-Chain Model to Study the Reproductive and Economic Impact of Reproductive Programs Combining Timed Artificial Insemination and Estrous Detection

J. O. Giordano, A. S. Kalantari, P. M. Fricke, M. C. Wiltbank, and V. E. Cabrera¹

Department of Dairy Science, University of Wisconsin-Madison

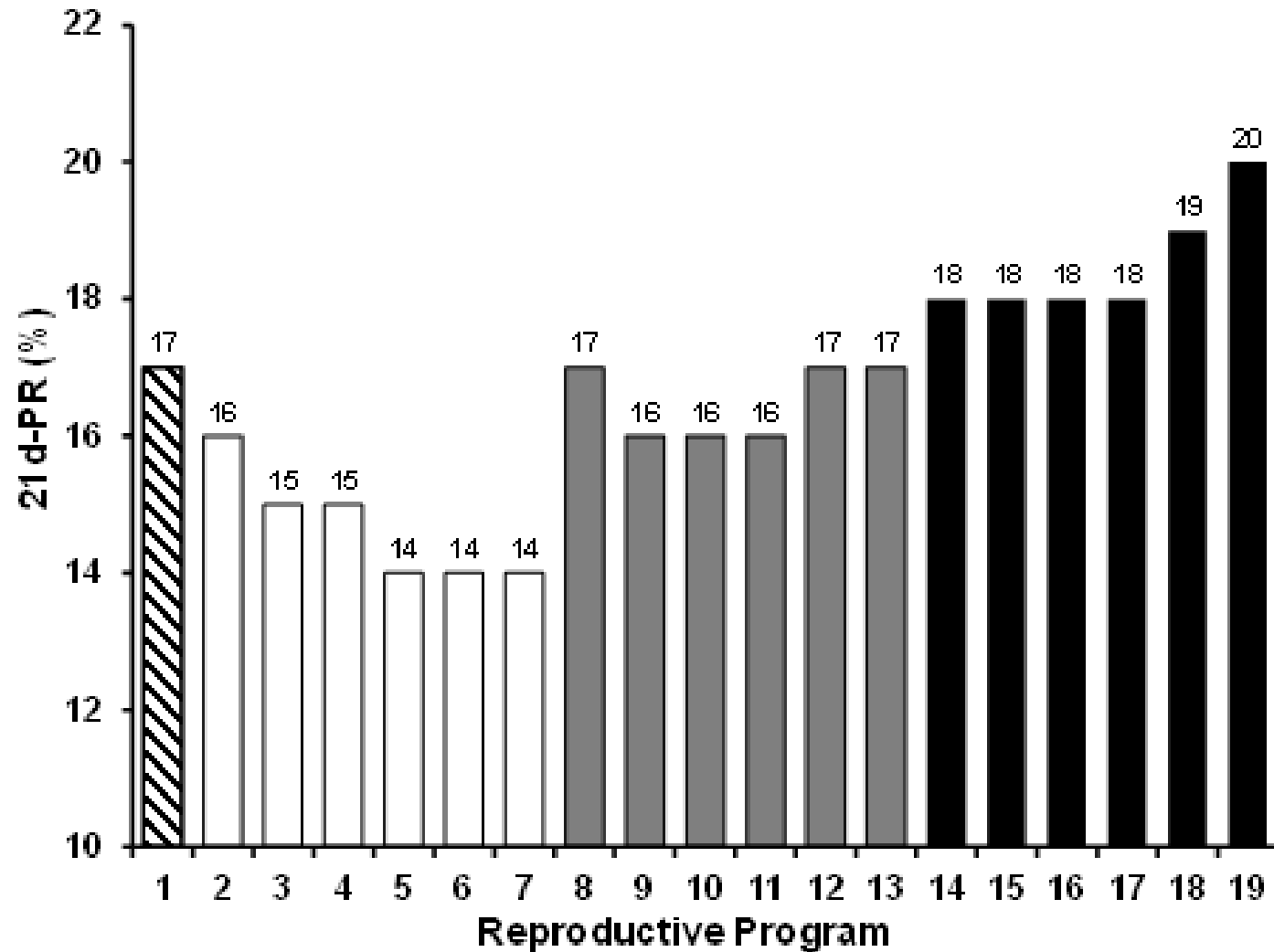
Journal of Dairy Science, In Review, Submitted 23 September 2011

Programas Reproductivos Evaluados

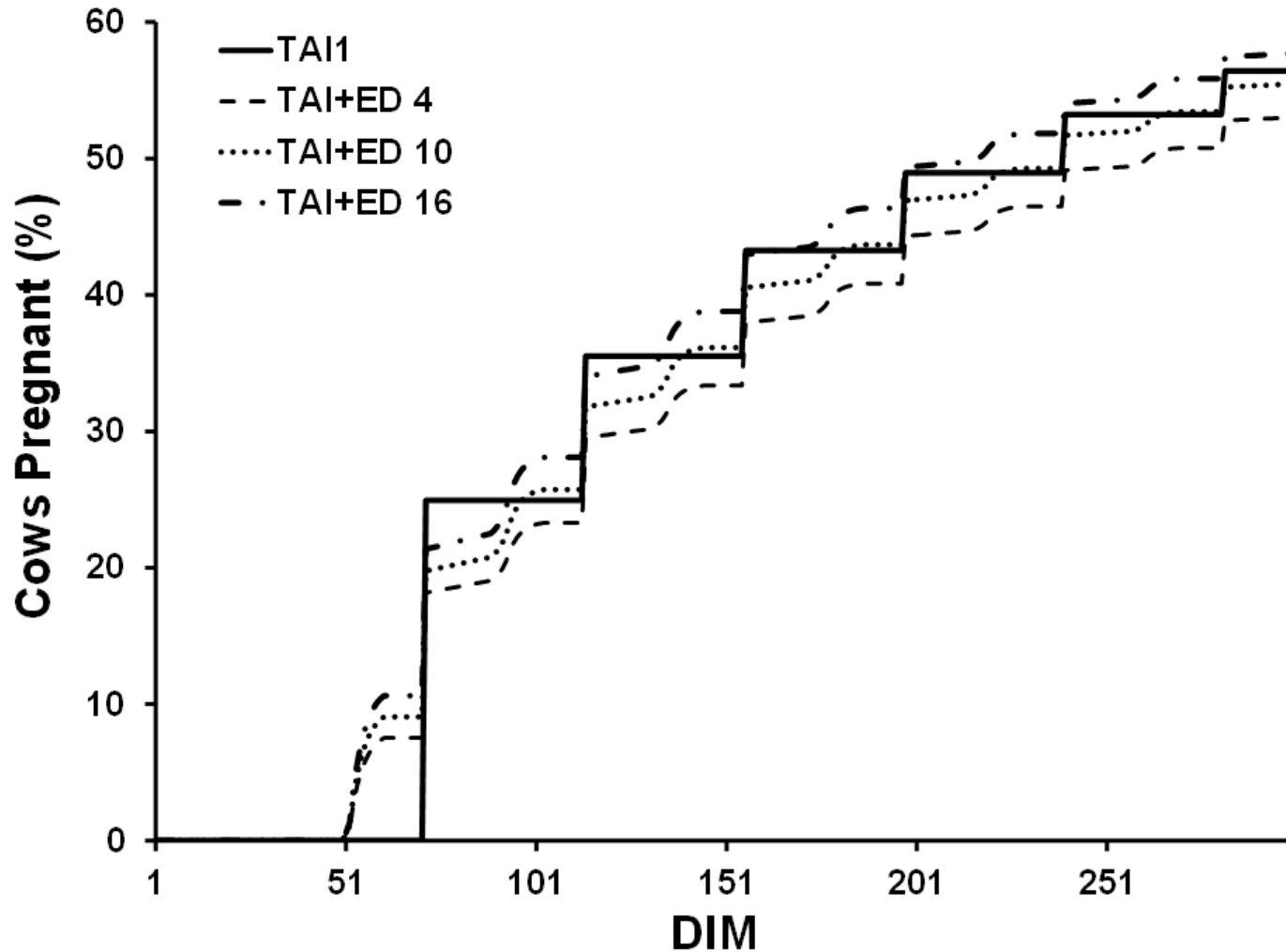
Programa	Descripción	Primera IA			Segunda y Subsecuentes IA		
		DC antes 1 st IATF ³	TC DC Antes 1 st IATF	TC IATF	DC antes IATF	TC DC antes IATF	TC IATF
1	IATF 1	-	-	42	-	-	30
2	IATF+DC 2	30	25	40	30	25	30
3	IATF+DC 3	40	25	38	40	25	30
4	IATF+DC 4	50	25	36	50	25	30
5	IATF+DC 5	60	25	34	60	25	28
6	IATF+DC 6	70	25	32	70	25	28
7	IATF+DC 7	80	25	30	80	25	28
8	IATF+DC 8	30	30	40	30	30	30
9	IATF+DC 9	40	30	38	40	30	30
10	IATF+DC 10	50	30	36	50	30	30
11	IATF+DC 11	60	30	34	60	30	28
12	IATF+DC 12	70	30	32	70	30	28
13	IATF+DC 13	80	30	30	80	30	28
14	IATF+DC 14	30	35	40	30	35	30
15	IATF+DC 15	40	35	38	40	35	30
16	IATF+DC 16	50	35	36	50	35	30
17	IATF+DC 17	60	35	34	60	35	28
18	IATF+DC 18	70	35	32	70	35	28
19	IATF+DC 19	80	35	30	80	35	28

DC=detección de celo, TC=tasa de concepción, IATF=inseminación artificial de tiempo fijo

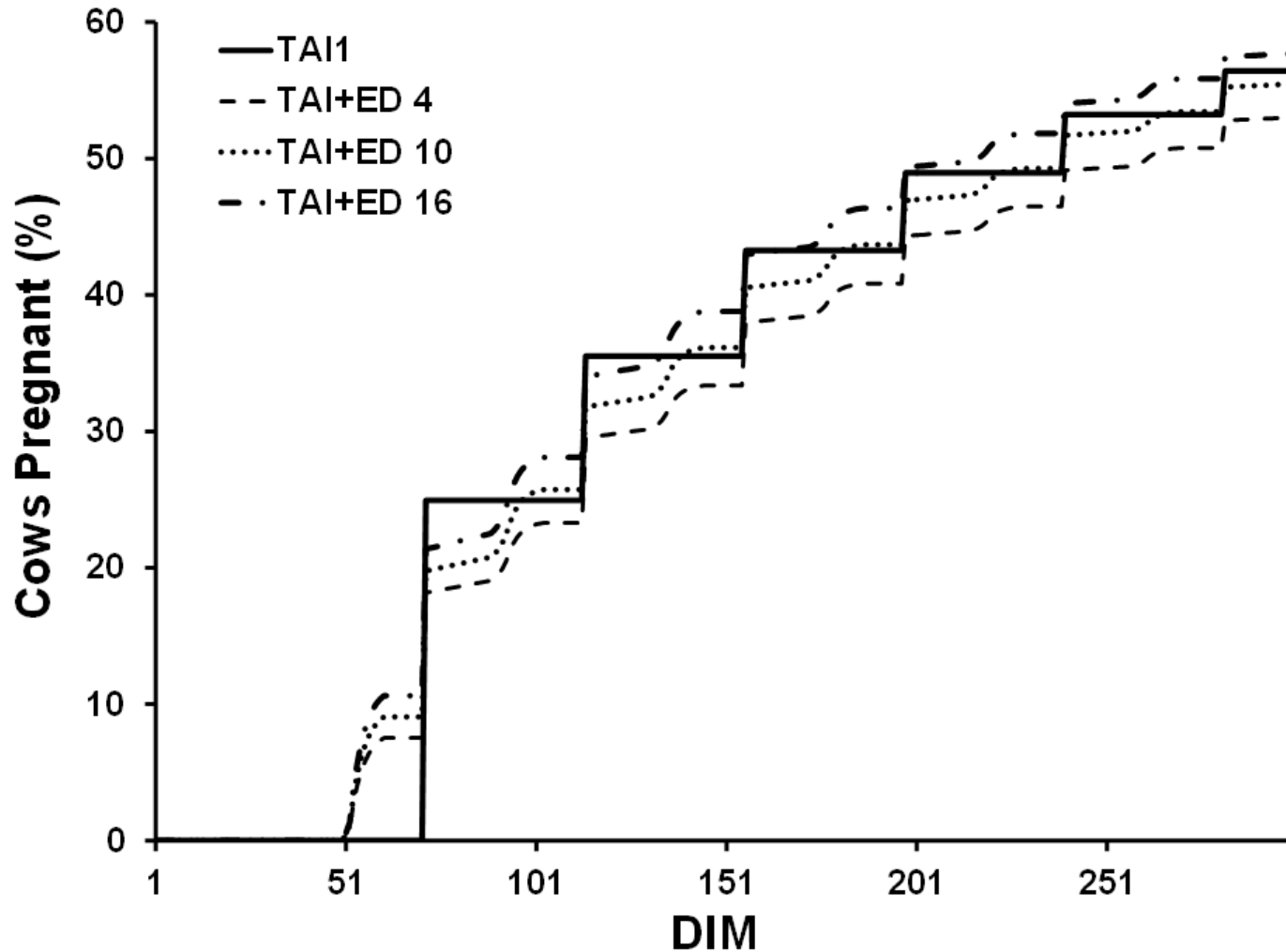
Parámetros Reproductivos



Parámetros Reproductivos



Parámetros Reproductivos

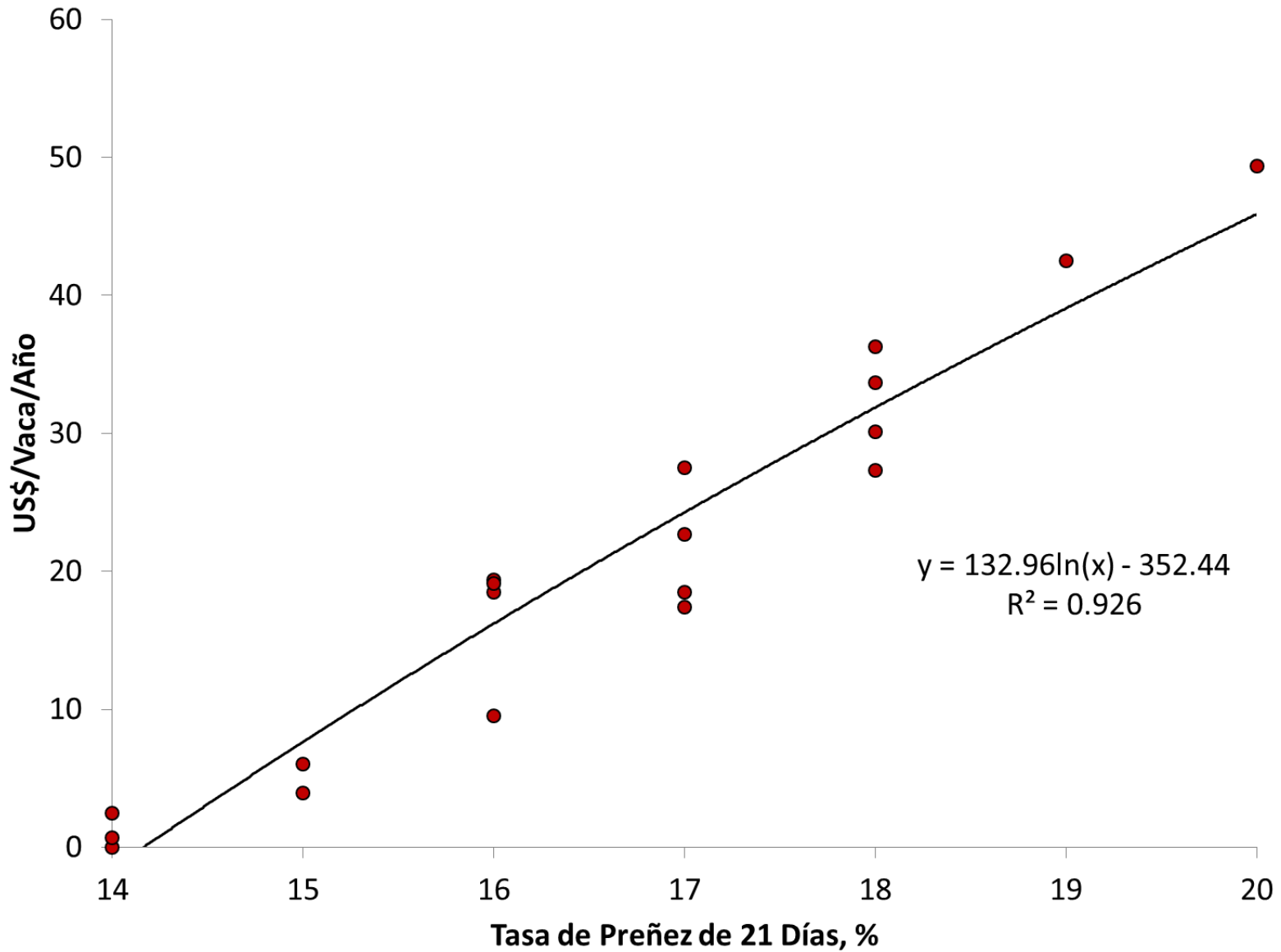


Parámetros Económicos, US\$

Programa	ISCA	Costo Descarte	Costo Reproductivo	Valor Terneros	VN Total
IATF 1	3362.8	-184.2	-41.3	42.0	3179.3
IATF+DC 2	3357.9	-187.8	-39.0	40.2	3171.4
IATF+DC 3	3355.7	-189.2	-38.1	39.4	3167.9
IATF+DC 4	3354.4	-190.5	-36.9	38.8	3165.8
IATF+DC 5	3352.9	-193.0	-35.7	37.6	3161.9
IATF+DC 6	3353.1	-193.9	-33.9	37.3	3162.6
IATF+DC 7	3353.7	-194.6	-31.8	37.1	3164.4
IATF+DC 8	3362.1	-185.3	-38.0	41.6	3180.4
IATF+DC 9	3361.6	-185.8	-36.8	41.4	3180.4
IATF+DC 10	3361.6	-186.1	-35.4	41.2	3181.3
IATF+DC 11	3361.6	-187.4	-33.9	40.7	3181.0
IATF+DC 12	3362.9	-187.2	-32.0	40.8	3184.6
IATF+DC 13	3364.9	-186.9	-29.7	41.1	3189.4
IATF+DC 14	3366.3	-182.9	-37.1	43.0	3189.2
IATF+DC 15	3367.2	-182.7	-35.7	43.1	3192.0
IATF+DC 16	3368.6	-182.2	-34.1	43.4	3195.6
IATF+DC 17	3369.9	-182.6	-32.4	43.3	3198.2
IATF+DC 18	3372.5	-181.7	-30.4	44.0	3204.4
IATF+DC 19	3375.6	-180.8	-28.1	44.6	3211.3

ISCA=ingresos sobre los costos de alimentación, VN= valor neto, IATF=inseminación artificial de tiempo fijo, DCV=detección de celo

Valor Económico Tasa de Preñez



Usamos la Aplicación?