UW-Dairy Management Decision Support TOOLS

Ferramentas para tomada de decisões em fazendas leiteiras

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13th INTERLEITE – International Symposium on Competitive Milk Production. Uberlândia, Minas Gerais State, 11 - 12 September 2013.

DairyMGT.info
Decision support tools

Dairy Management UW-Extension
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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

- Ph.D. Student Opportunity - New!

Latest Projects

- Improving Dairy Farm Sustainability
- Genomic Selection and Herd Management
- Dairy Reproduction Decision Support Tools
- Strategies of Pasture Supplementation
- Improving Dairy Cow Fertility

UW

- University of Wisconsin - Madison
- UW - Cooperative Extension
- UW - Dairy Science
- Dairy Cattle Reproduction
- Dairy Cattle Nutrition
- Milk Quality
- UW Dairy Nutrient
- Understanding Dairy Markets
- UW Center for Dairy Profitability

Helpful Link

- 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

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Victor E. Cabrera @vecabrera 21 Aug
UW-Madison Dairy Cattle Center Facts & Figures
news.cals.wisc.edu/wp-content/upl...

Victor E. Cabrera @vecabrera 19 Aug
interleite.com.br/curso-avancado...
fb.me/2jK2lhvht

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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

- 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$Plus: A Reproductive Analysis Tool that Includes Heat Detection Devices
- Economic Value of Sexed Semen Programs for Dairy Heifers
- UW-DairyRepro$: A Reproductive Economic Analysis Tool
- Exploring Timing of Pregnancy Impact on Income Over Feed Cost
- Dairy Reproductive Economic Analysis

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

- LGM-Dairy Analyzer
- Working Capital Decision Support System
- The Wisconsin Dairy Farm Ratio Benchmarking Tool
- Decision Support System Program for Dairy Production and Expansion
- Least Cost Optimizer
- LGM-Dairy Premium Sensitivity
- Return to Labor
- Estimate Your Mailbox Price
- LGM Dairy Feed Equivalent Calculator
- Net Guarantee Income Over Feed Cost for LGM-Dairy

Price Risk

- LGM-Dairy Premium Sensitivity
- Least Cost Optimizer
- LGM Premium
- LGM Dairy Feed Equivalent Calculator
- Milk Component Price Analysis

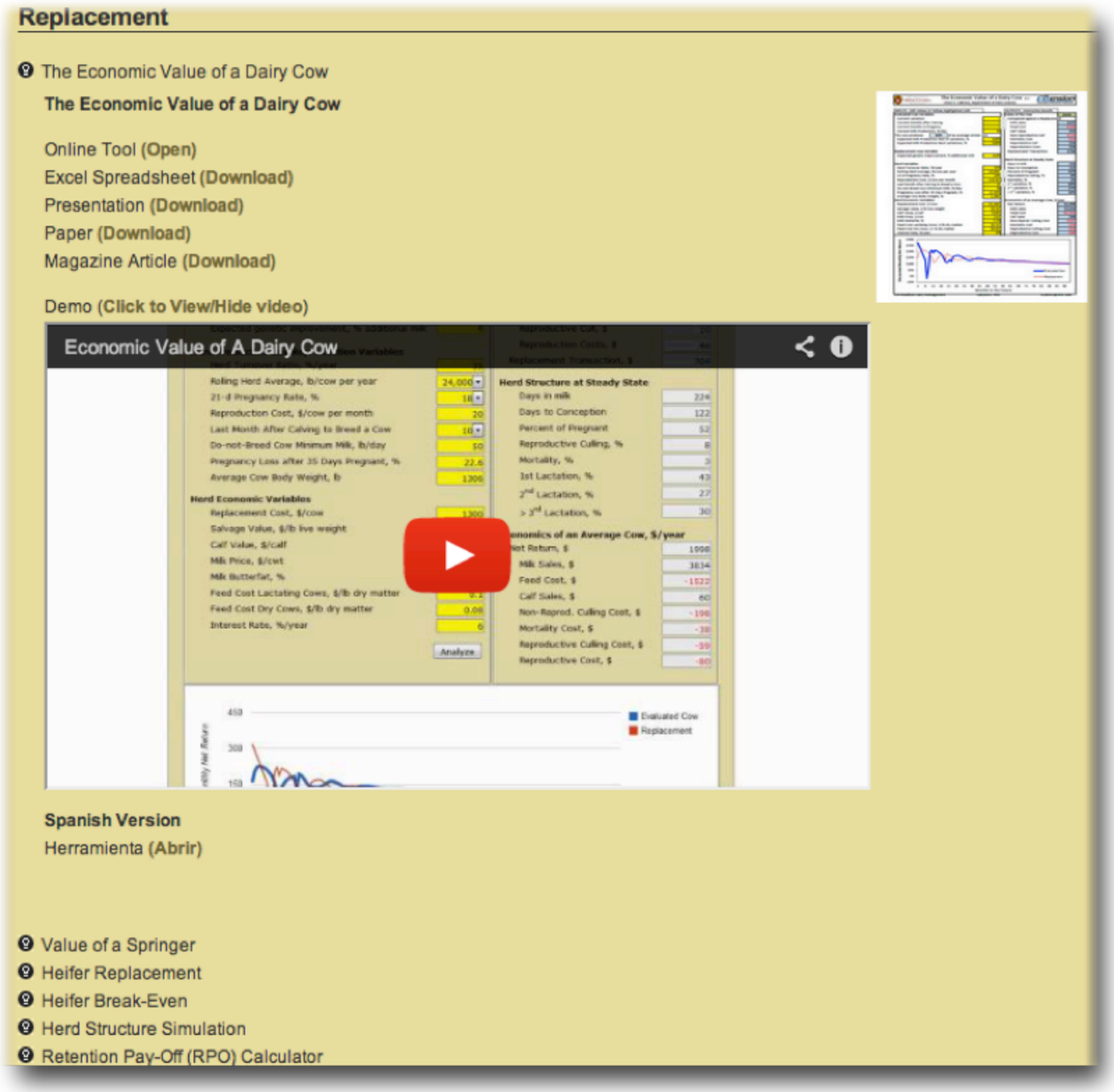
Environment

- Dairy Nutrient Manager
- Grazing-N: Application that Balances Nitrogen in Grazing Systems
- Seasonal Prediction of Manure Excretion
- Dynamic Dairy Farm Model

UW-Dairy Ferramentas de manejo

Conteúdo de cada ferramenta

- Nome descritivo
- Tipo:
- Online
- Planilha
- Instalável
- Documentos associados:
- Guia
- Instruções
- Apresentação
- Artigos
- Video demonstrativo
- Diferentes idiomas
- Diferentes unidades
- Diferentes países



Por quê ferramentas para suporte á tomada de decisões?

Decisões específicas para cada fazenda

Avaliação caso a caso

Fazendas são diferentes entre si

Condições nas fazendas mudam

Decisões devem se ajustar

Mercado muda constantemente

Impacto sobre deciões

Aplicativos amigáveis

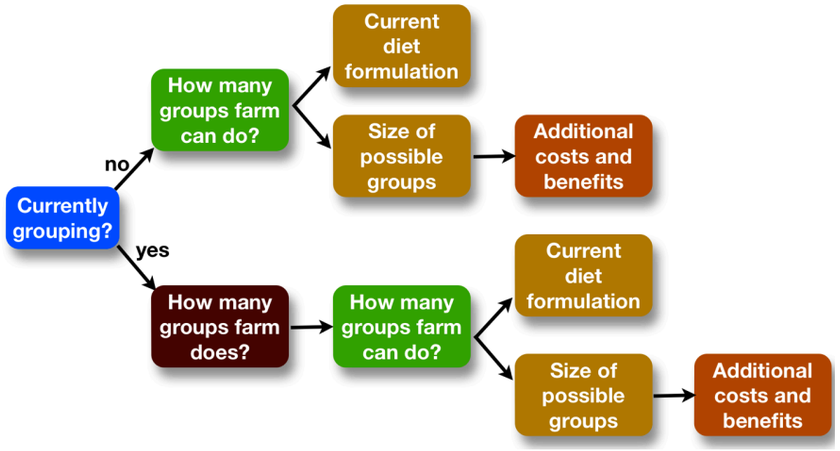
Fáceis de usar, mas robustos

Demonstração de algumas ferramentas

3 diferentes áreas do manejo

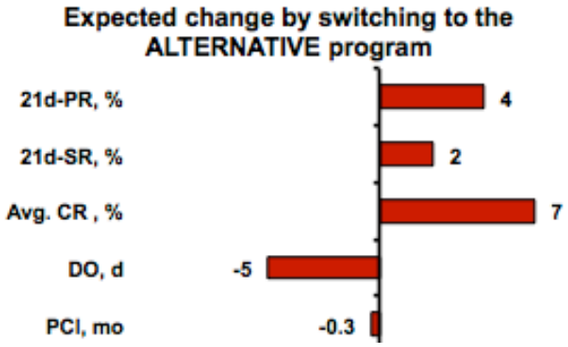
Alimentação

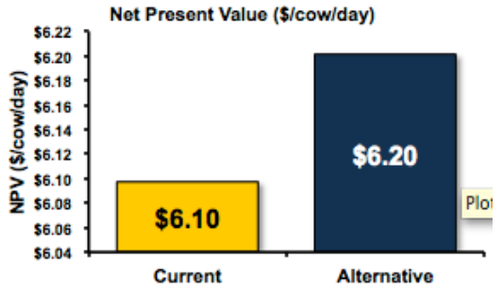
Estratégias de agrupamento de vacas



Reprodução

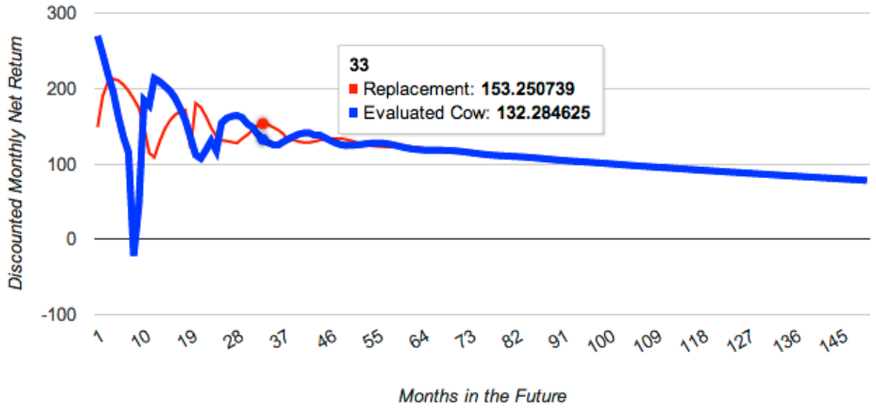
UW-DairyRepro$Plus: uma análise reprodutiva

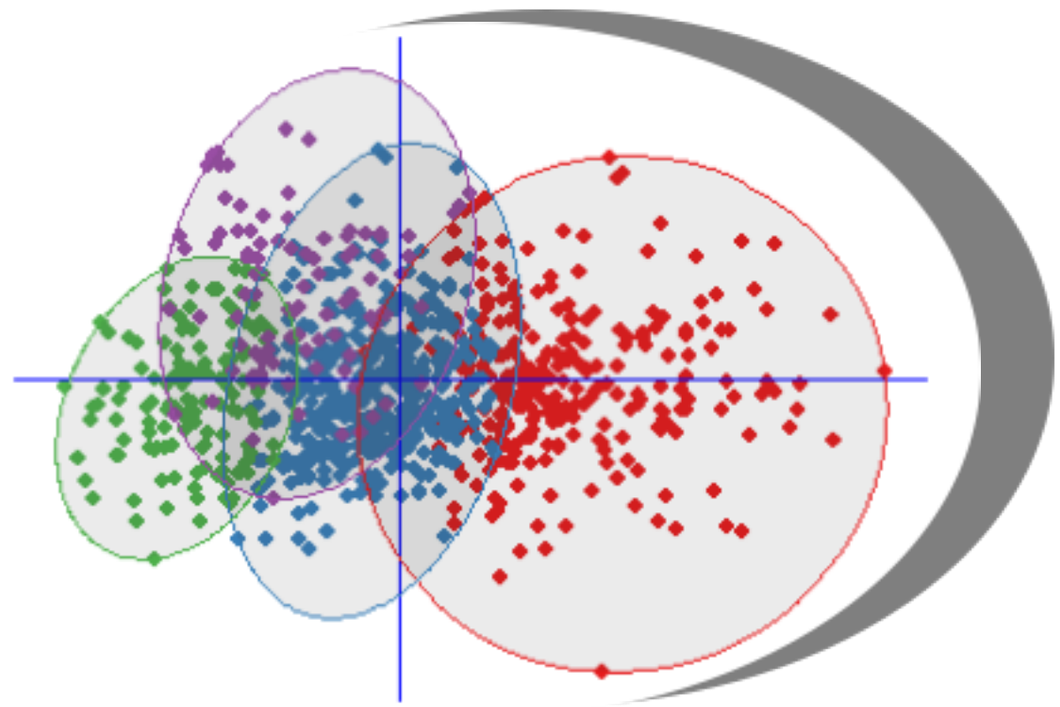




Reposição

Valor econômico de uma vaca





Estratégias de agrupamento

Estratégias para agrupar vacas

Depende das características da fazenda e do rebanho

Requerimentos das vacas

- Energia
- Proteína
- CMS

Número de vacas em lactação no rebanho

Características da fazenda

Capacidade de manejar diferentes lotes de produção

Adaptado de McGilliard et al., 1983;
St-Pierre and Thraen, 1999

Requerimentos nutricionais de um lote

Energia e proteína

Fator guia

Fator multiplicativo para ajustar os requerimentos do lote

Stallings and McGilliard, 1984
St-Pierre and Thraen, 1999

$$EL_{lote}\ (Mcal) = 83^{o}\ Percentil\ (EL_{lote_vacas})$$

$$PB_{lote}\ (\%) = 83^{o}\ Percentil\ (PB_{lote_vacas})$$

Critérios para agrupamento

Existem vários

Dias em lactação (DEL)

Baseado no estágio de lactação

Leite corrigido para gordura

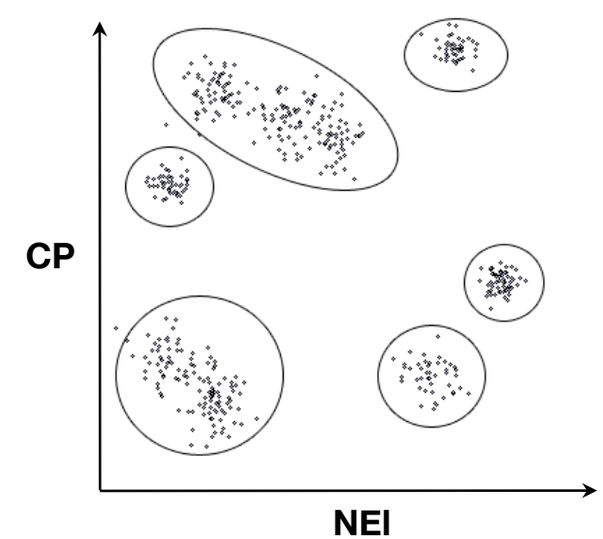
Baseado no nível de produção, medido como LCG

Mérito leiteiro

Função da produção de LCG e do PV

Cluster (Melhor)

Função de EL e PB.
Parece ser o critério mais eficiente.



McGilliard et al., 1983
St-Pierre and Thraen, 1999

Valor de EL, PB e leite

Determina o custo da dieta (Agosto 2013)

Usando alimentos de referência

Método de Petersen

St-Pierre and Giamocic, 2000

Milho: 9% CP + 0.91 Mcal = $0.27/kg

Far. Soja: 54% CP + 1.00 Mcal = $5.87/kg

Preços de EL e PB

EL ($/Mcal) = 0.116

PB ($/kg) = 0.747

http://dairymgt.info/tools/feedval_12/index.php

Preço do leite

$0.42/kg

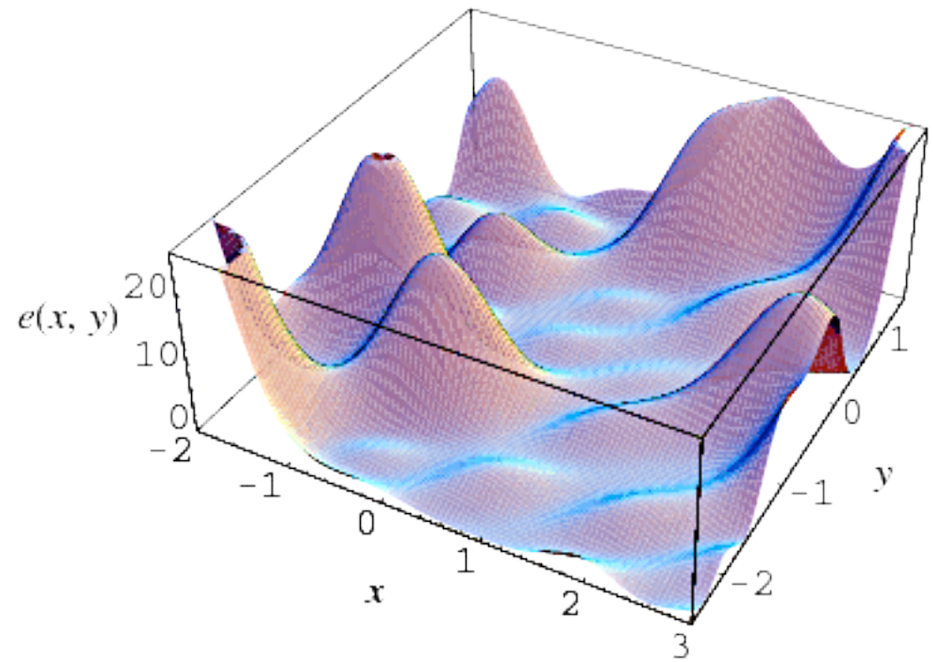
http://future.aae.wisc.edu/

Otimizar vacas em um lote

Maximizar a receita menos o custo dos alimentos (RMCA)

Otimização não linear

- Processo iterativo
- Procura por máxima RMCA

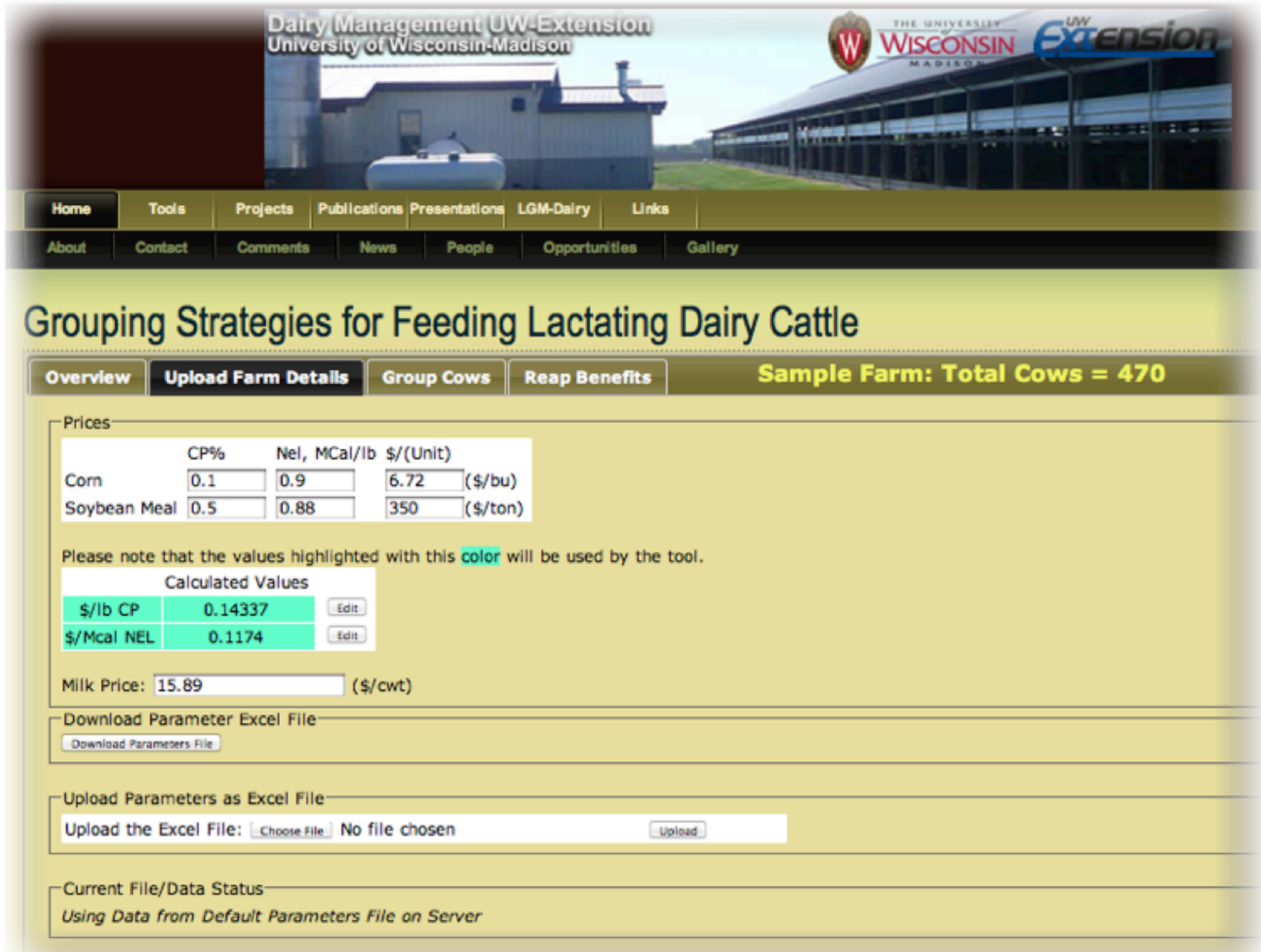


Max(RMCA) = SUM($RMCA_{lote}$)

$RMCA_{lote}$ = Preço do leite – Custo dos alimentos

Estratégias de agrupamento

Para vacas em lactação



Dados da fazenda

Grupo de dados específicos

Valores de EL e PB

- Valores da fazenda
- Calculados a partir do milho e FS

Preço do leite

- Valor da fazenda

Estratégias de agrupamento

- Situação atual
- Novas possibilidades

Informações das vacas

Tabela com dados específicos

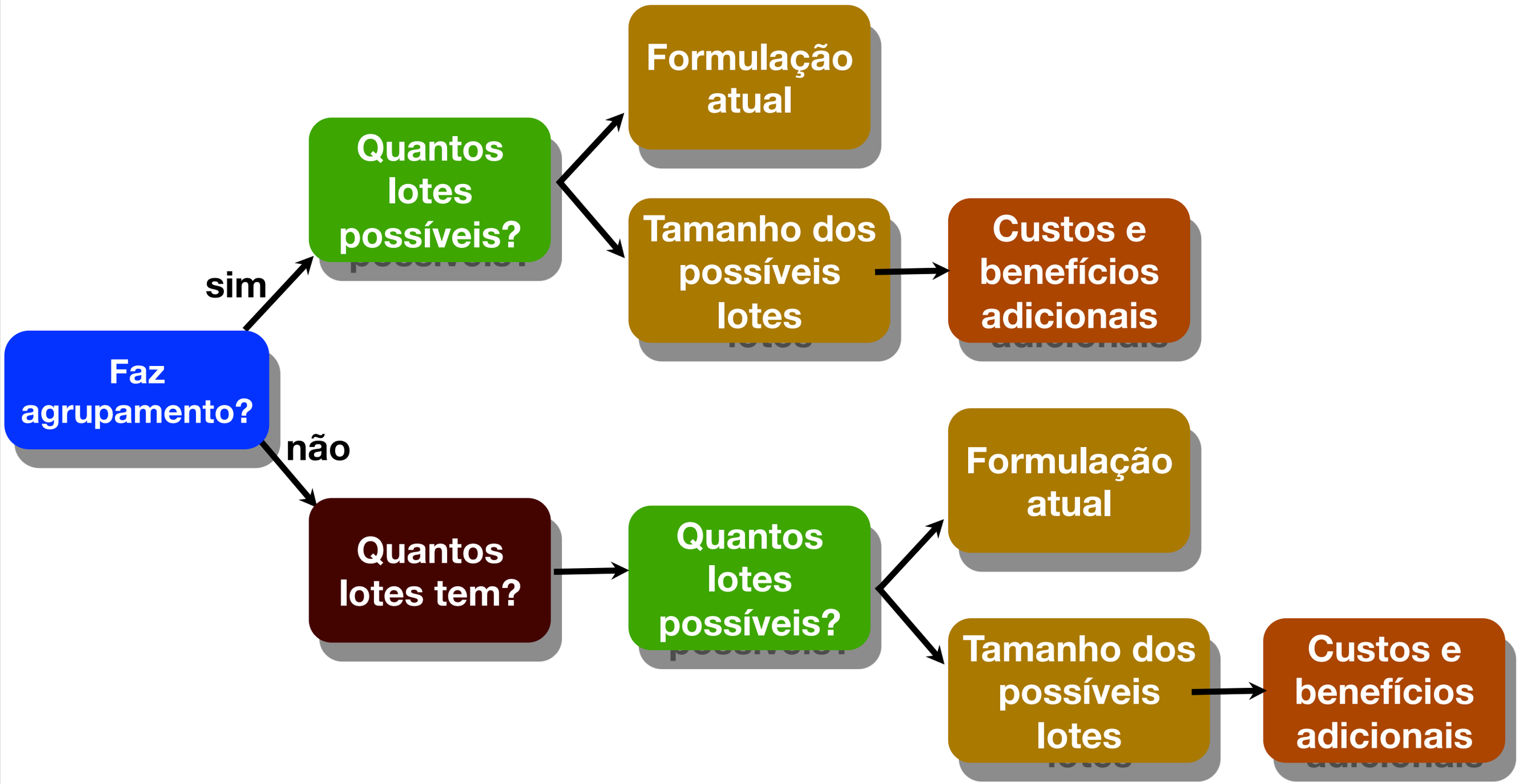
Cow ID	Parity	DIM	Milk, lb/d	Milk fat, %
6234	1	84	62	4.1
132	7	118	73	3.8
6196	1	198	85	3.4
6149	4	199	114	3.6
5045	2	280	81	4.3

Informações adicionais

- PV da vaca
- PV médio por paridade

Estratégias de agrupamento

Possibilidades



Demonstração da ferramenta

Impacto econômico do agrupamento

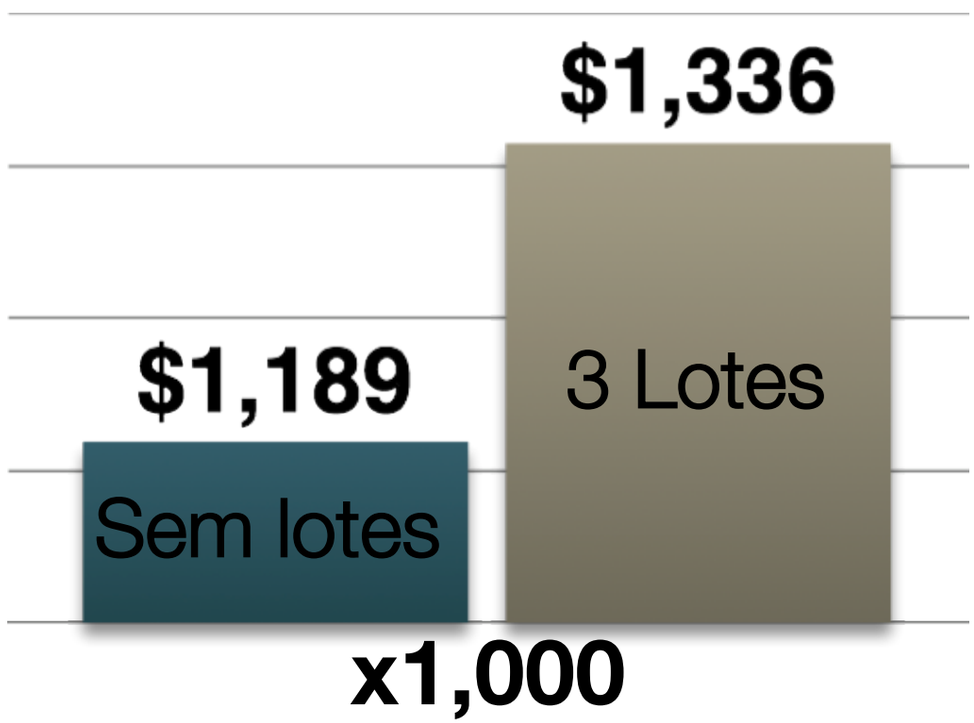
Situação atual	
Vacas em lactação	470
Lotes	1
EL, Mcal/lb	0.80
PB, %	17%

Situação possível	
Lotes	3
Tamanho dos lotes	100, 100, 270
Custo adicional, $	$1,000/mês
Perda de leite	2.27 kg/vaca
Perda total de leite	Eq. a 4 dias
Economia, $	$0

Sistema de suporte às decisões - exemplo

Critérios de agrupamento

	Possibilidade			
	Num. de vacas	EL, Mcal/kg	PB, %	RMCA, $/vaca/dia
Lote 1	270	1.56	16.05	9.3
Lote 2	100	1.43	14.18	7.2
Lote 3	100	1.37	13.07	4.7



Valor anual do agrupamento
$147,000/470 vacas

Cabrera et al., 2012

Análise dos registros das fazendas

30 fazendas leiteiras em Wisconsin

1 ou 3 lotes

- Lotes de mesmo tamanho

Agrupamento

- 83° percentil PB e EL_L

Mesmos valores para todas

- \$0.35/kg leite
- \$0.316/kg PB
- \$0.1174/Mcal EL_L

PV estimado

- 500 kg primíparas
- 590 kg multíparas

Análise dos registros das fazendas

30 fazendas leiteiras em Wisconsin

	Vacas em lactação (n=30)	RMCA (1 lote)	RMCA (3 lotes)
		$/vaca/ano	
Média	788	$2,311	$2,707
Mínimo	< 200	$697	$1,059
Máximo	> 1,000	$2,967	$3,285

Aumento da RMCA ($/vaca/ano)

- Entre 7 e 52%
- Média = $396
- Amplitude = $161 to $580

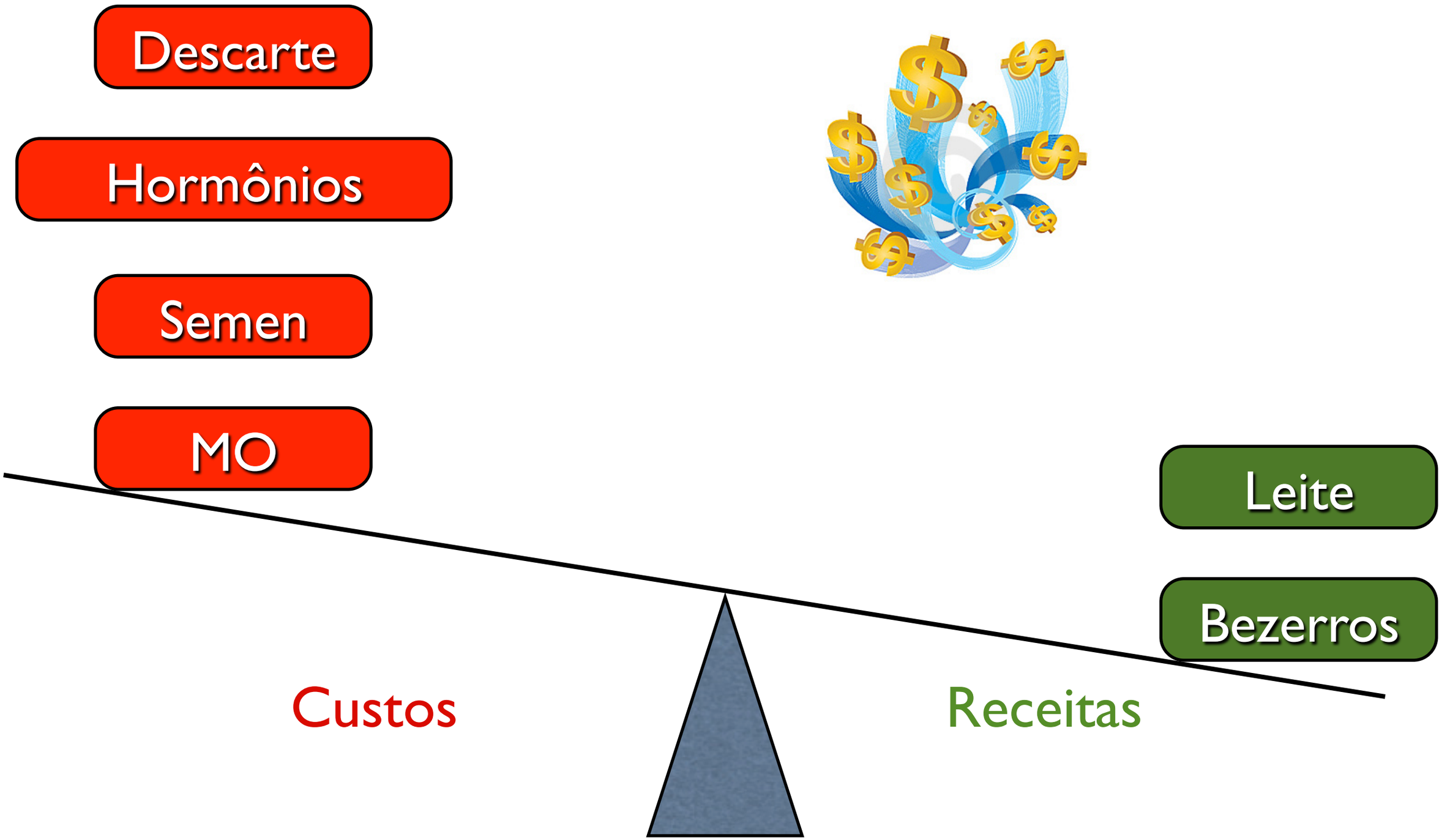
Mesmo com custos adicionais consideráveis

- Ainda eleva margem líquida entre 5 e 47%

UW-Dairy Repro$ Plus: Ferramenta de análise reprodutiva

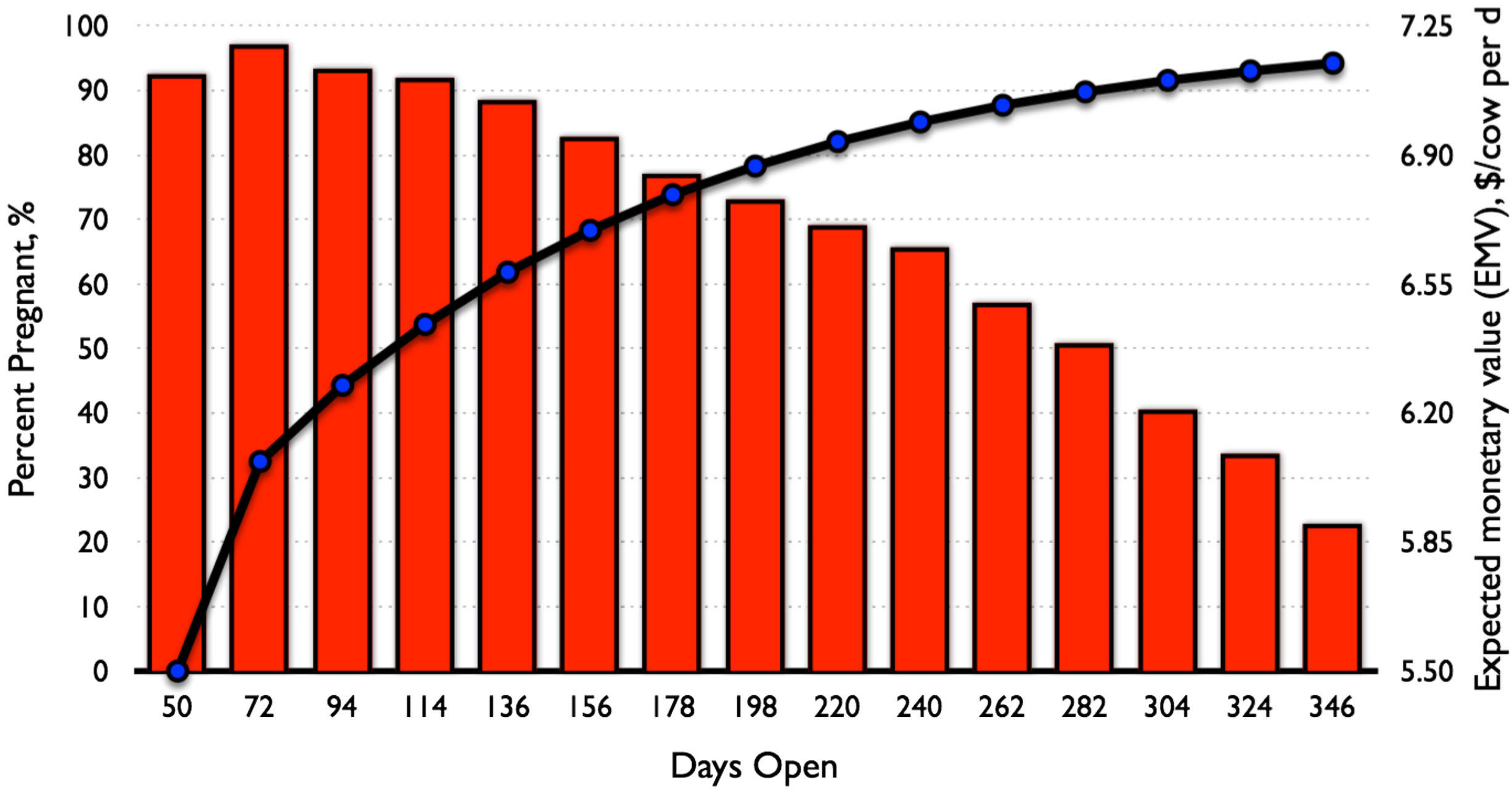
Custos e receitas da reprodução

Maximize os benefícios



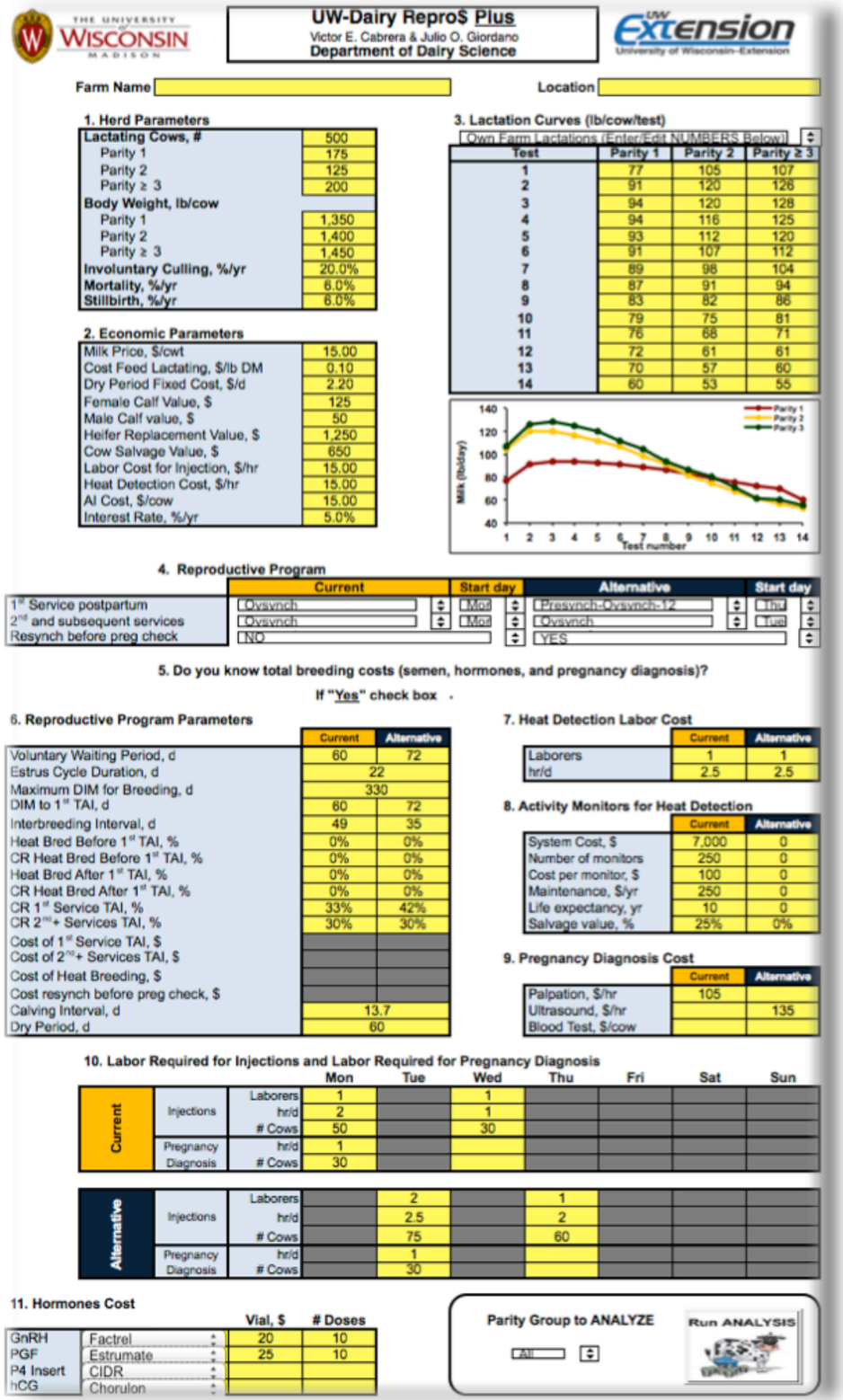
Reprodução vs. valor esperado

Lucratividade do rebanho depende da reprodução



UW-Dairy Repro$ Plus

Avaliação econômica da fazenda



UW-Dairy Repro$ Plus
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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	6.0%
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 (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

4. Reproductive Program

	Current	Start day	Alternative	Start day
1st Service postpartum	Ovsynch	Mon	Presynch-Ovsynch-12	Thu
2nd and subsequent services	Ovsynch	Mon	Ovsynch	Tue
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 1st TAI, d	60	72
Interbreeding Interval, d	49	35
Heat Bred Before 1st TAI, %	0%	0%
CR Heat Bred Before 1st TAI, %	0%	0%
Heat Bred After 1st TAI, %	0%	0%
CR Heat Bred After 1st TAI, %	0%	0%
CR 1st Service TAI, %	33%	42%
CR 2nd+ Services TAI, %	30%	30%
Cost of 1st Service TAI, $		
Cost of 2nd+ 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

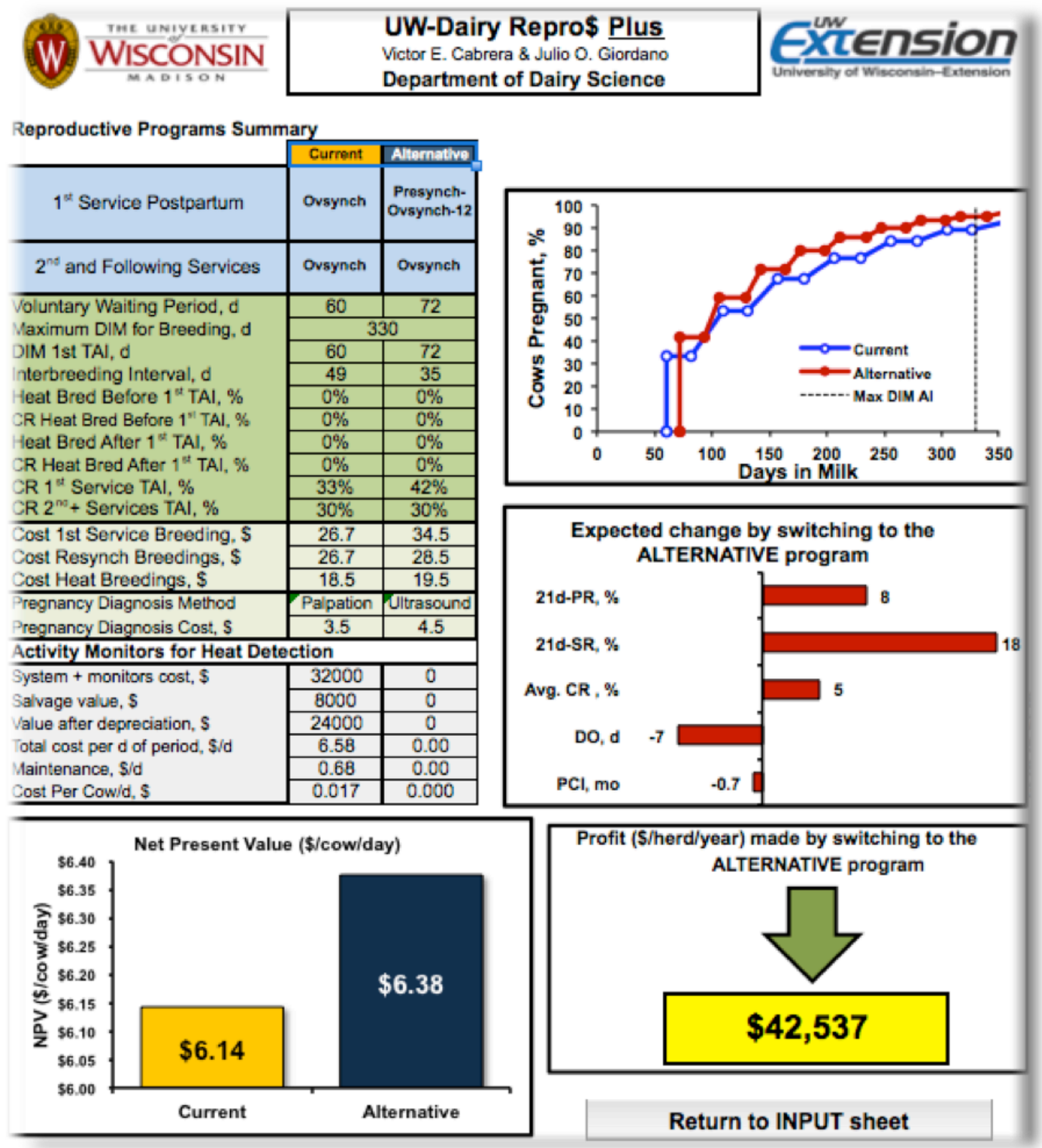
			Mon	Tue	Wed	Thu	Fri	Sat	Sun
Current	Injections	Laborers	1		1				
		hr/d	2		1				
		# Cows	50		30				
	Pregnancy Diagnosis	hr/d	1						
		# Cows	30						
Alternative	Injections	Laborers		2		1			
		hr/d		2.5		2			
		# Cows		75		60			
	Pregnancy Diagnosis	hr/d		1					
		# Cows		30					

11. Hormones Cost

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

Parity Group to ANALYZE: All

Run ANALYSIS



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

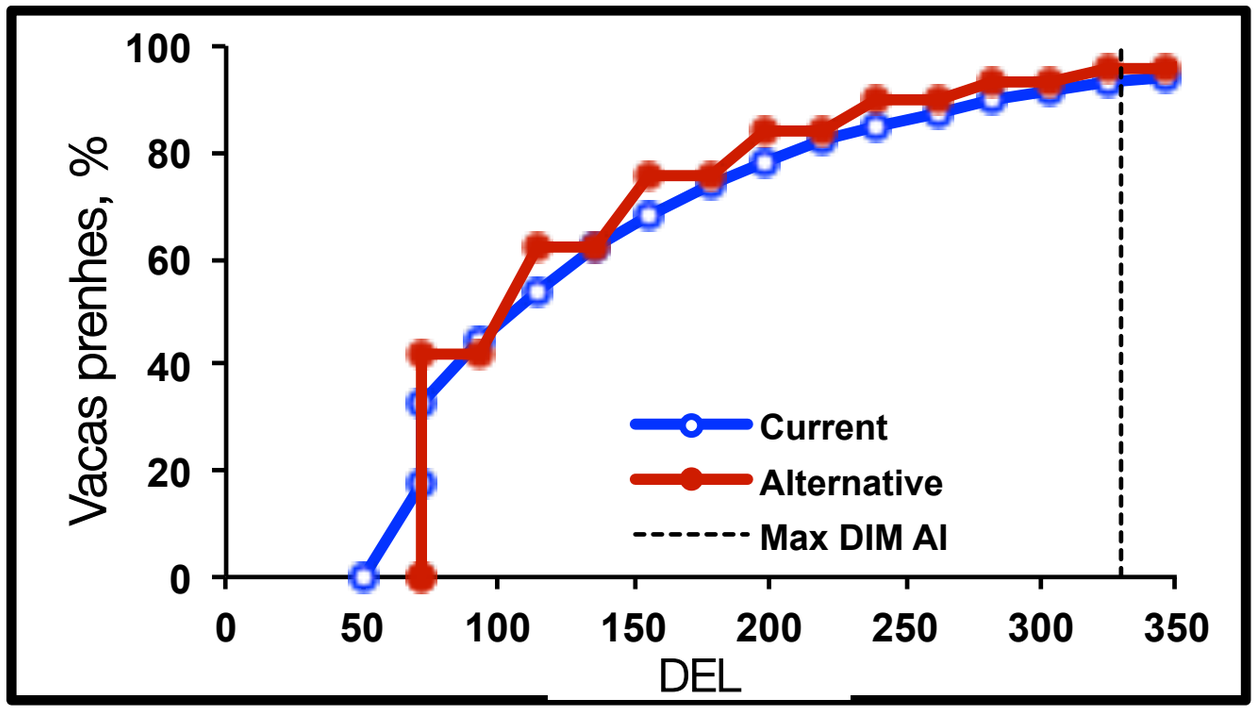
Reproductive Programs Summary

	Current	Alternative
1st Service Postpartum	Ovsynch	Presynch-Ovsynch-12
2nd 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 1st TAI, %	0%	0%
CR Heat Bred Before 1st TAI, %	0%	0%
Heat Bred After 1st TAI, %	0%	0%
CR Heat Bred After 1st TAI, %	0%	0%
CR 1st Service TAI, %	33%	42%
CR 2nd+ 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

Return to INPUT sheet

Desempenho reprodutivo

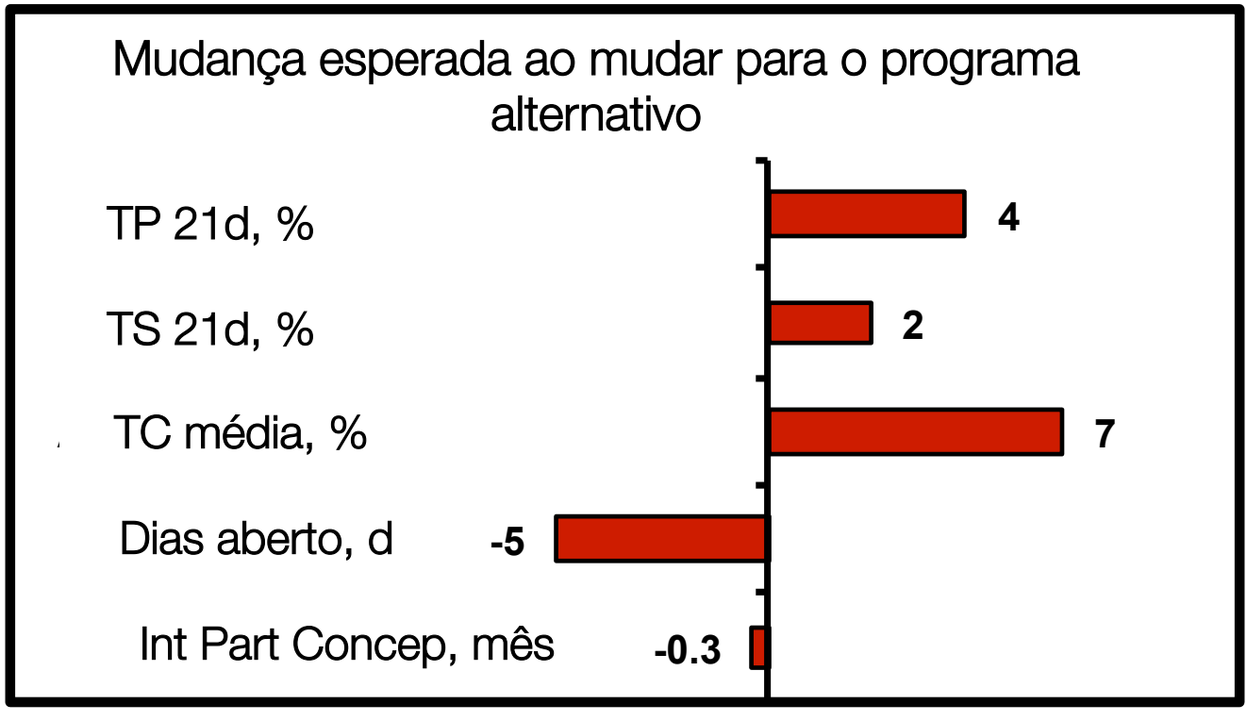
Programa atual vs. alternativo



Exemplo: (primeiro serviço)
OvSynch vs. PreSynch-OvSynch e
Detecção de cio vs. Sem detecção

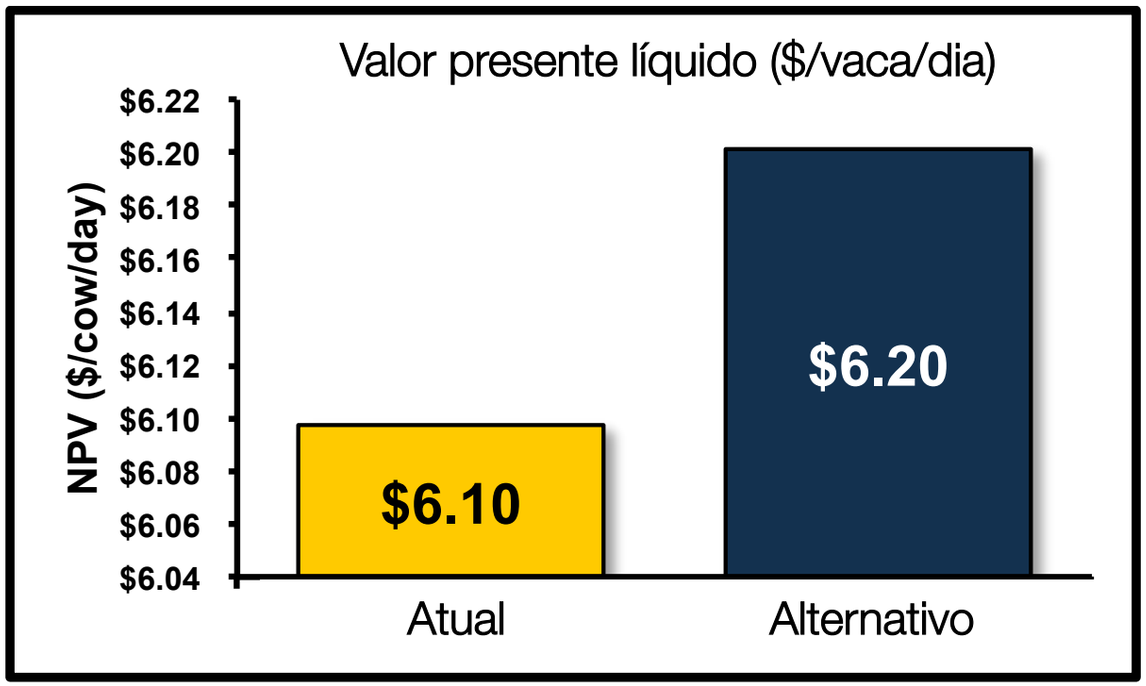
Programa alternativo é melhor

Melhores TP, TS e TC aos 21 dias



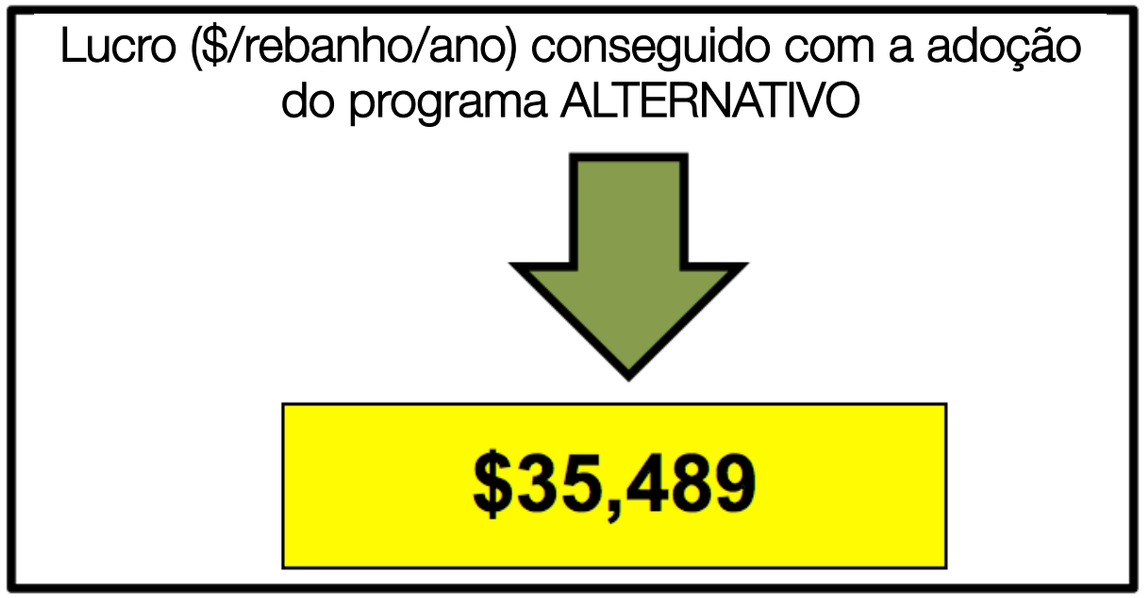
Desempenho econômico

Programa atual vs. alternativo



Exemplo: (primeiro serviço)
OvSynch vs. PreSynch-OvSynch e
Detecção de cio vs. Sem detecção

Programa alternativo proporciona maior retorno líquido
$38/vaca/ano



Repro$ Plus aplicação 1

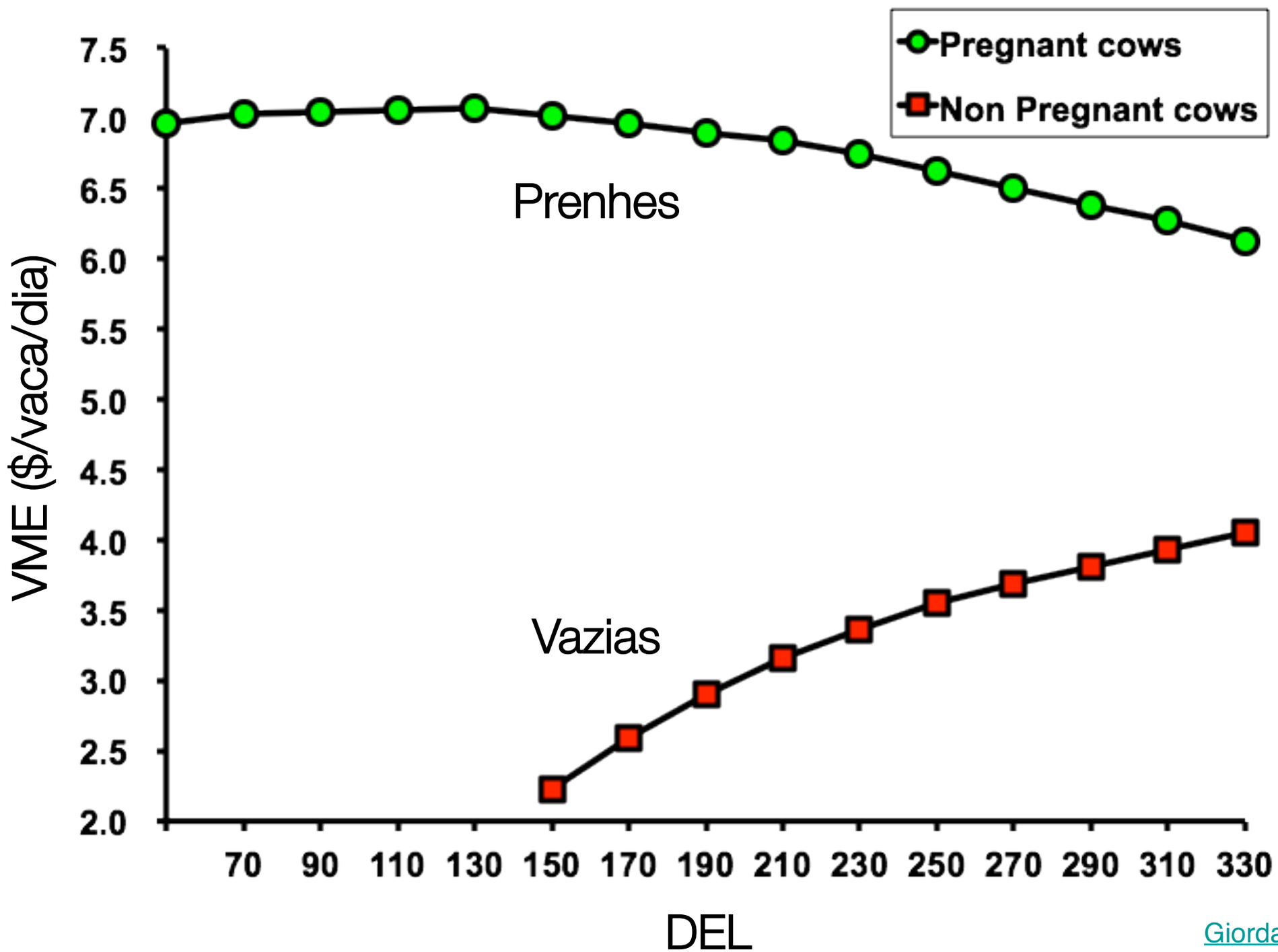
Interação IATF x Detecção de cio

	A	B	C
1° Serviço	Double-OvSynch		Det. Cio
2° Serviço ou +	ReSynch-D32	Double-OvSynch	Det. Cio
Período volunt. espera, d	82	82	50
Intervalo entre IAs, d	42	49	21
TC ao 1° serviço, %	45	45	33
TC ao 2° serviço ou +, %	30	39	30

Giordano et al. (2011)

Repro$ Plus application 1

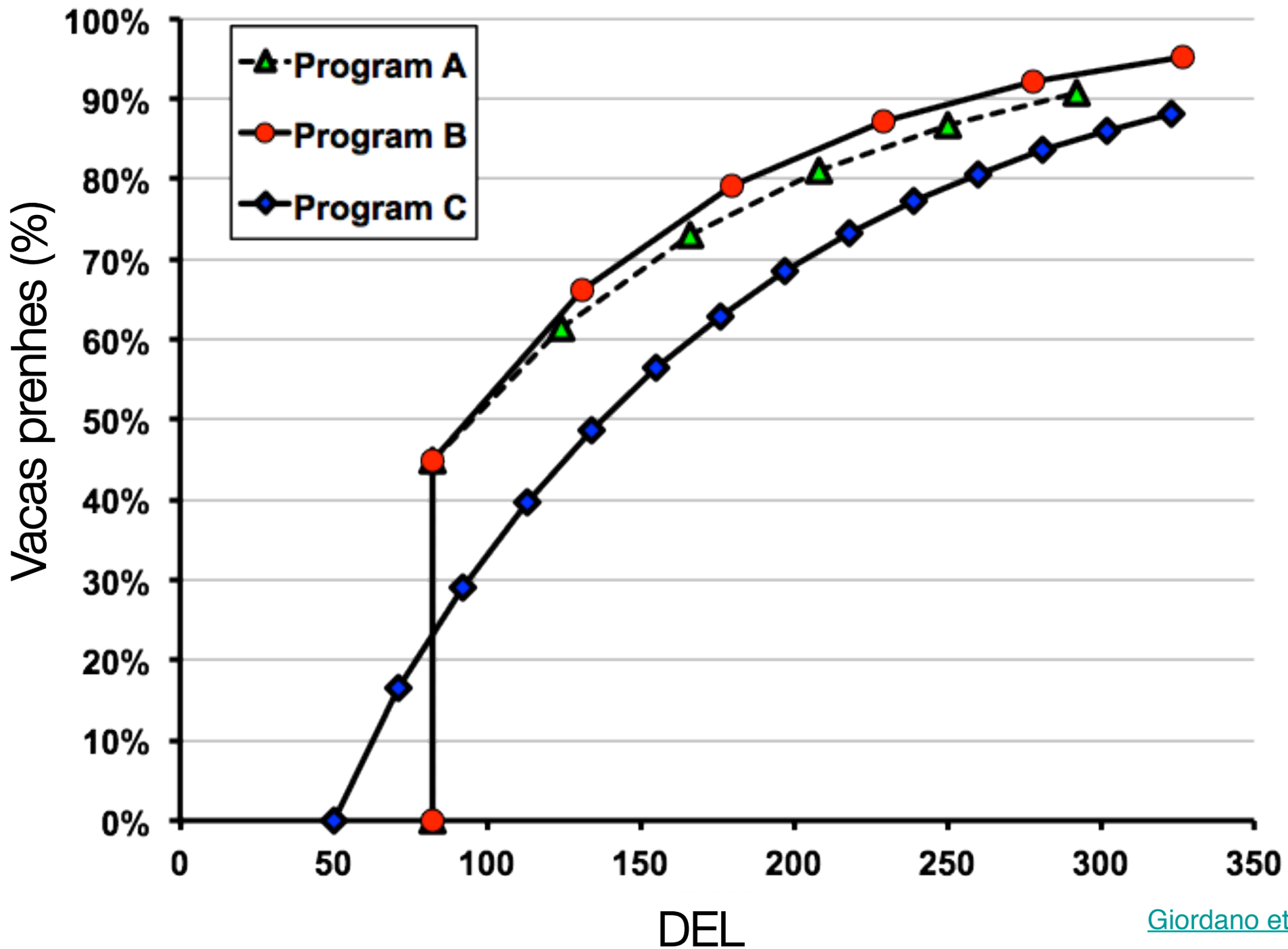
Valor monetário esperado (VME)



Giordano et al. (2011)

Repro$ Plus aplicação 1

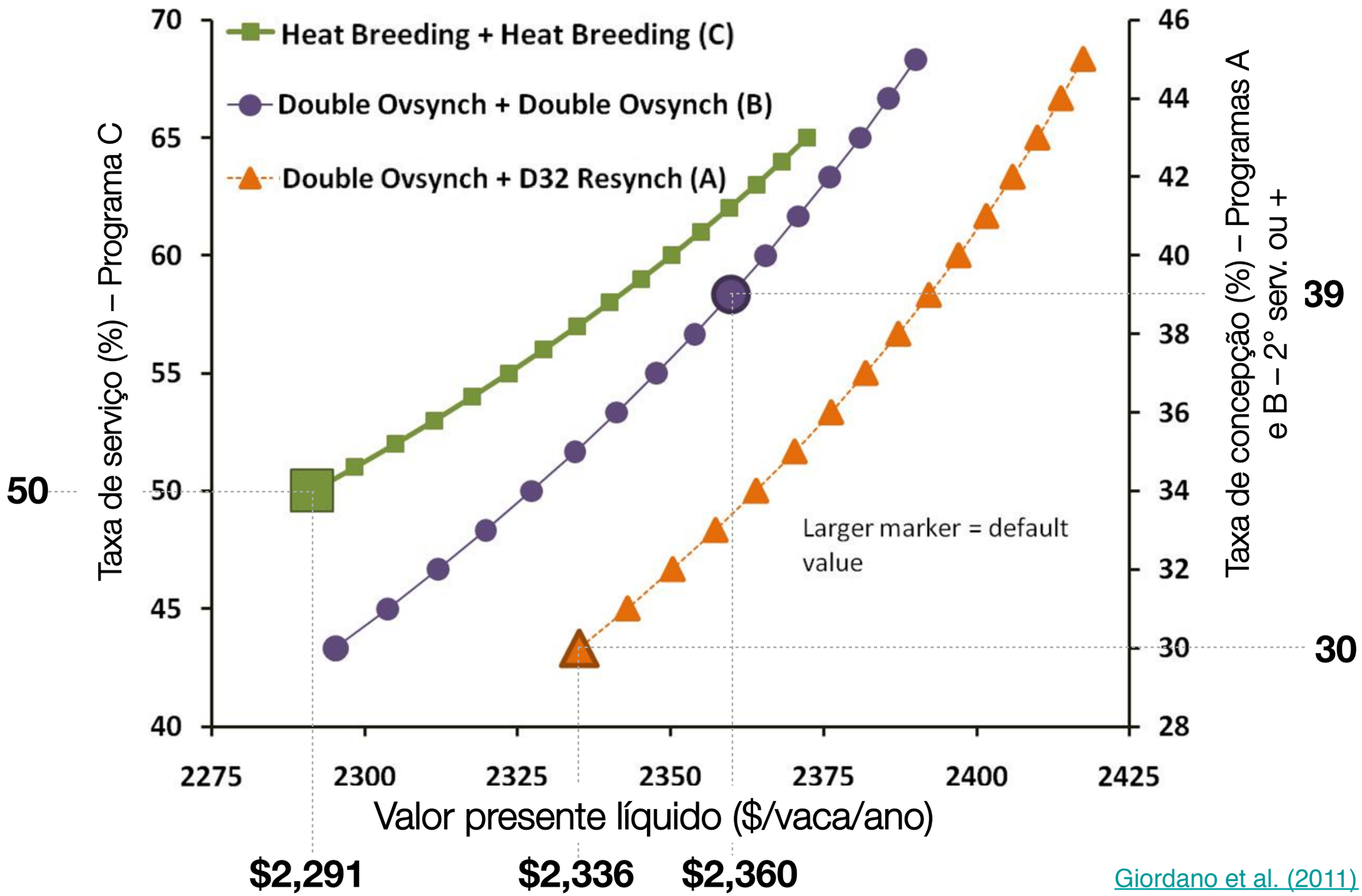
Desempenho reprodutivo



Giordano et al. (2011)

Repro$ Plus aplicação 1

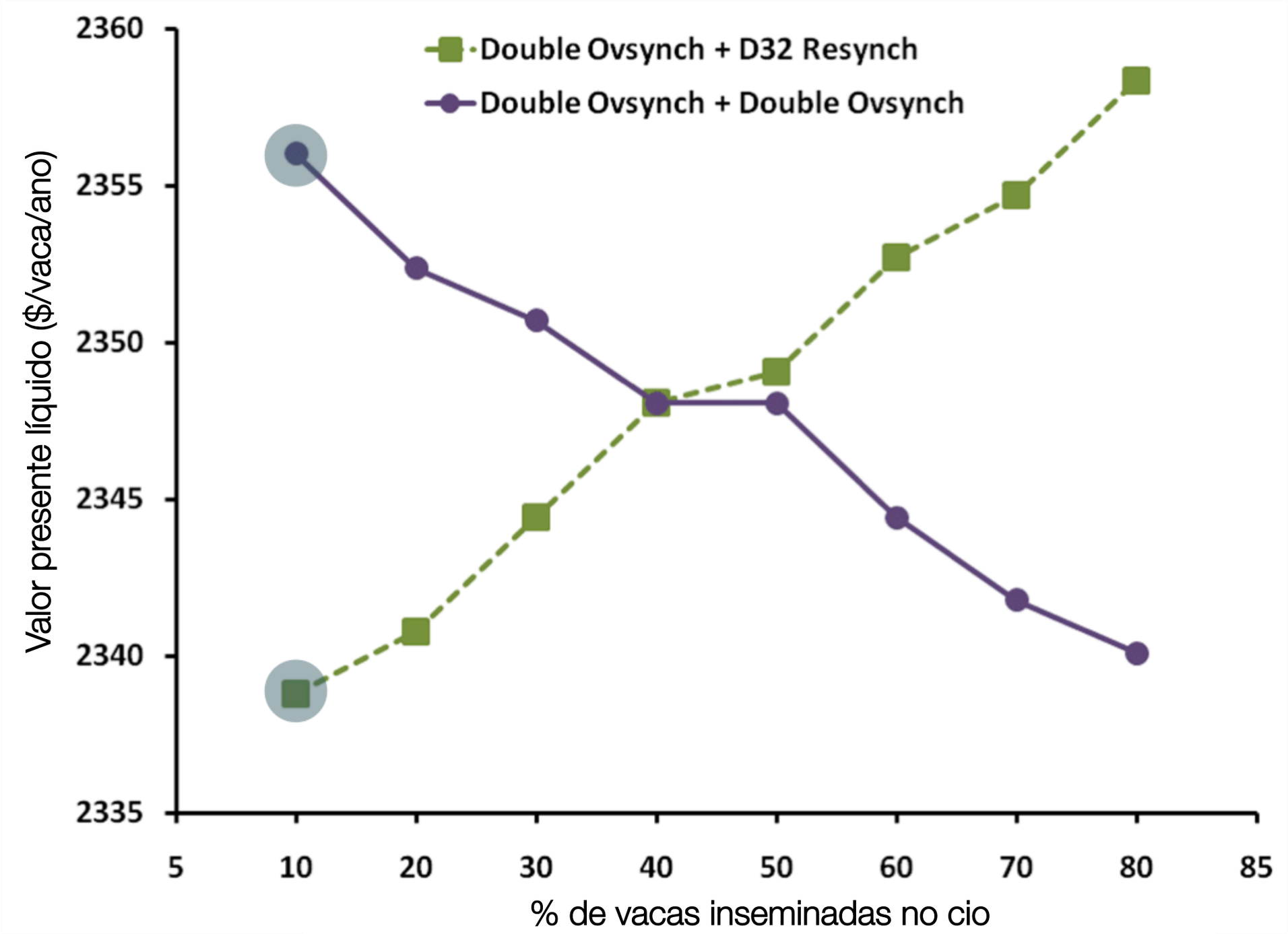
Sensibilidade às taxas de serviço e concepção



Giordano et al. (2011)

Repro$ Plus aplicação 1

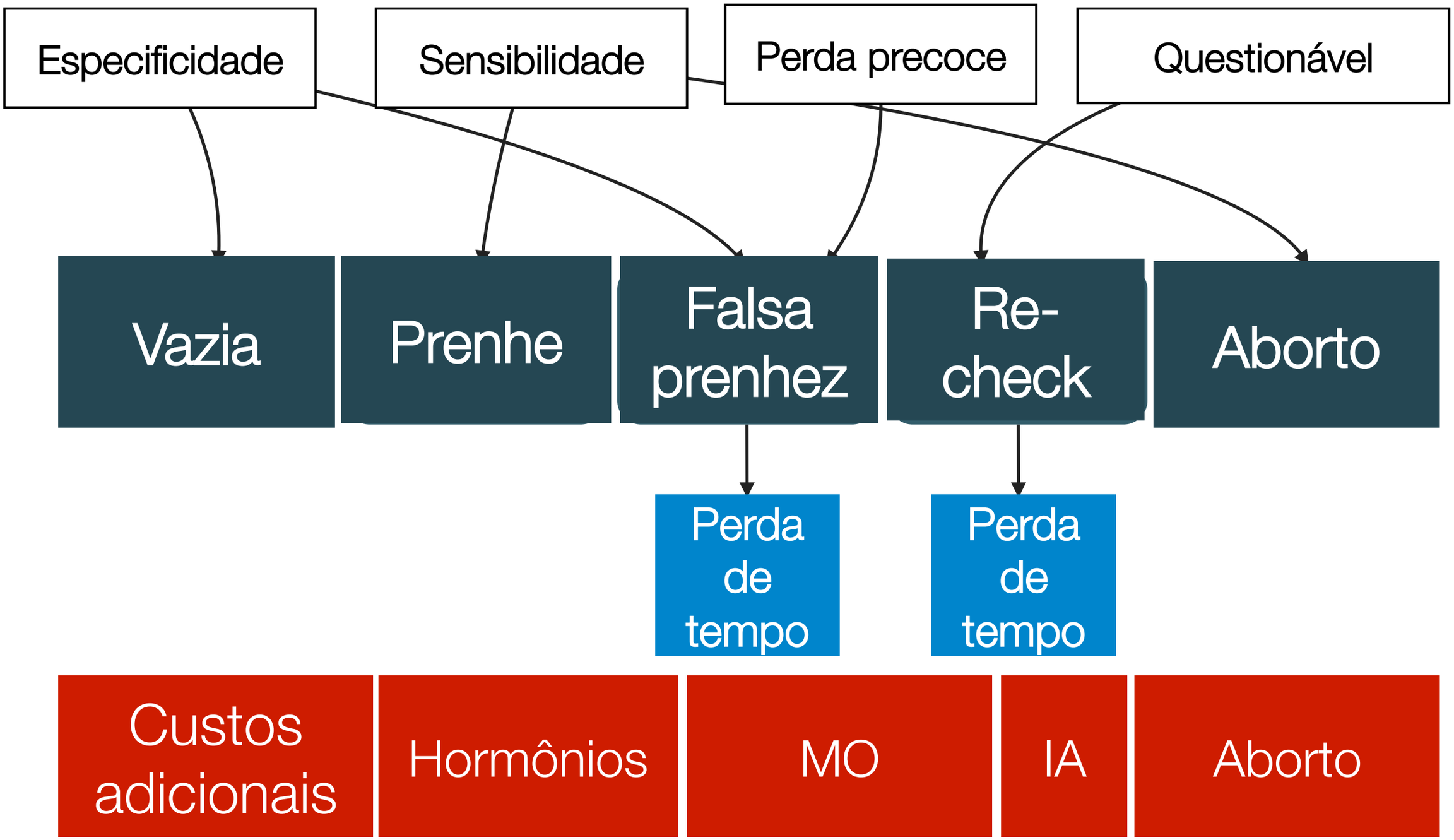
Impacto da inclusão da IA com detecção de cio aos programas para vacas com ≥ 2 serviços



Giordano et al. (2011)

Repro$ Plus aplicação 2

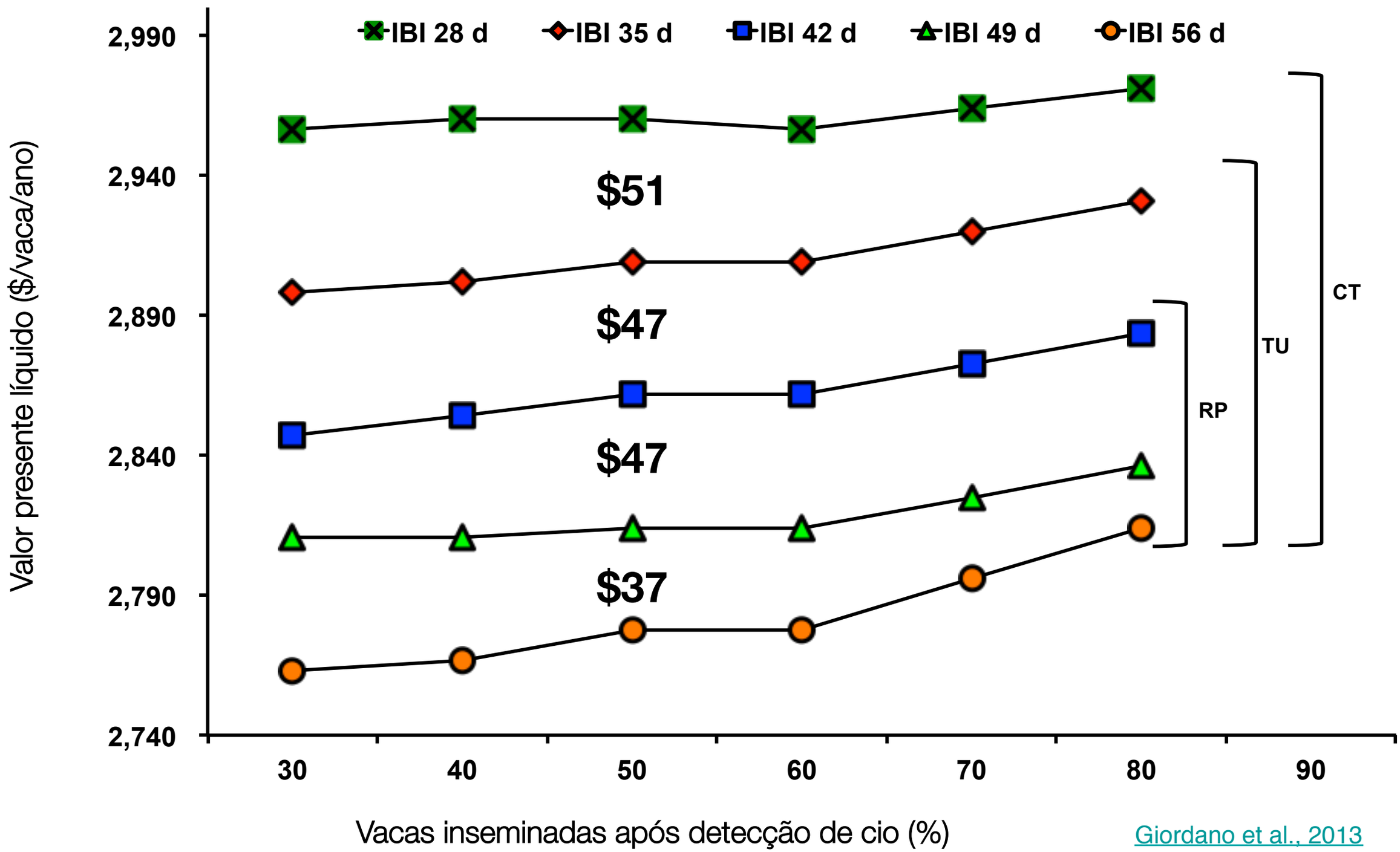
Teste químico para detecção precoce de prenhez



Giordano et al., 2013

Repro$ Plus aplicação 2

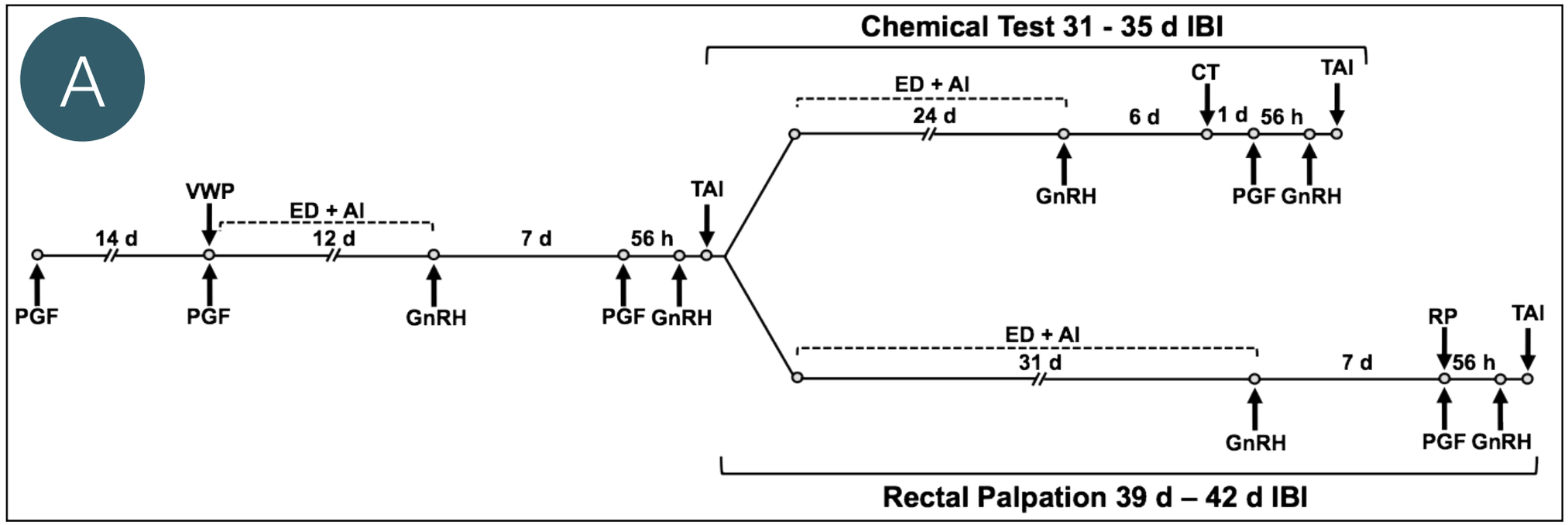
Valor do intervalo mais curto entre IAs (ICI)

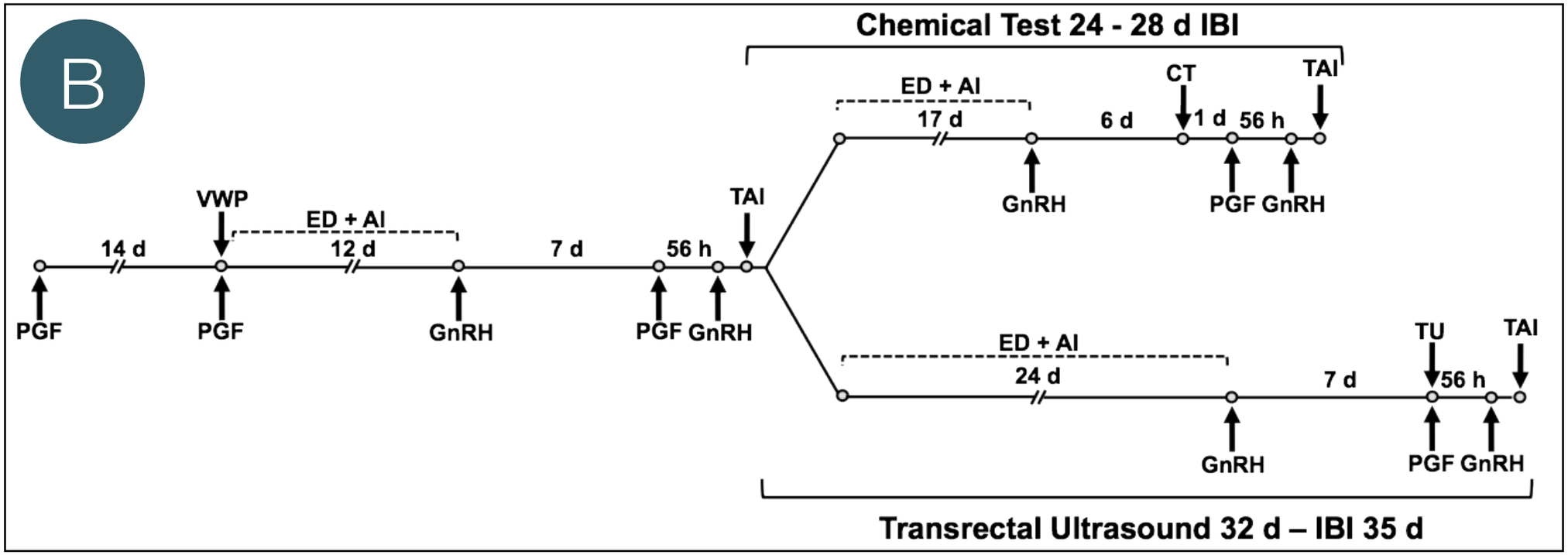


Giordano et al., 2013

Repro$ Plus aplicação 2

Teste de programas de ICI

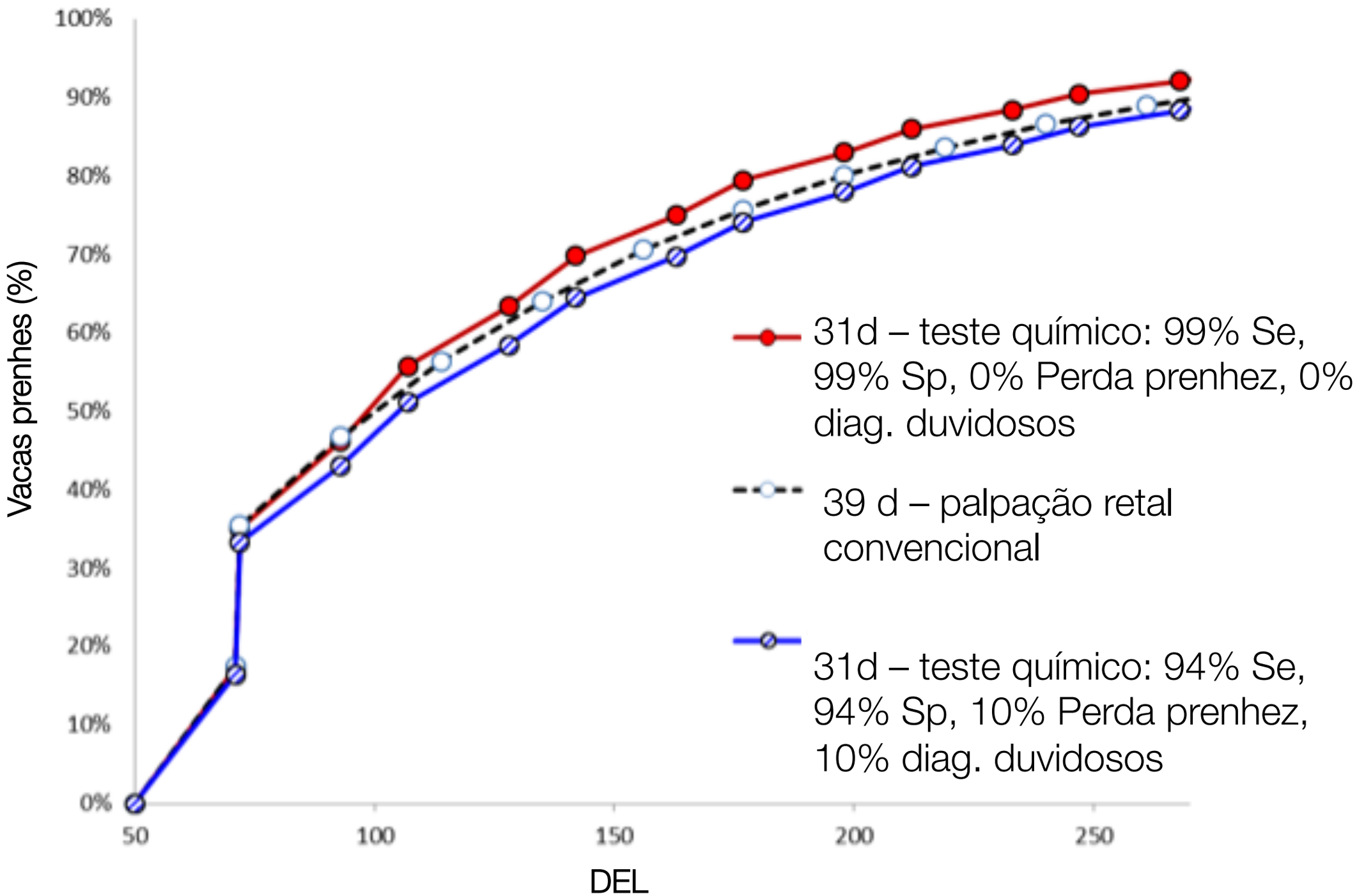




Giordano et al., 2013

Repro$ Plus aplicação 2

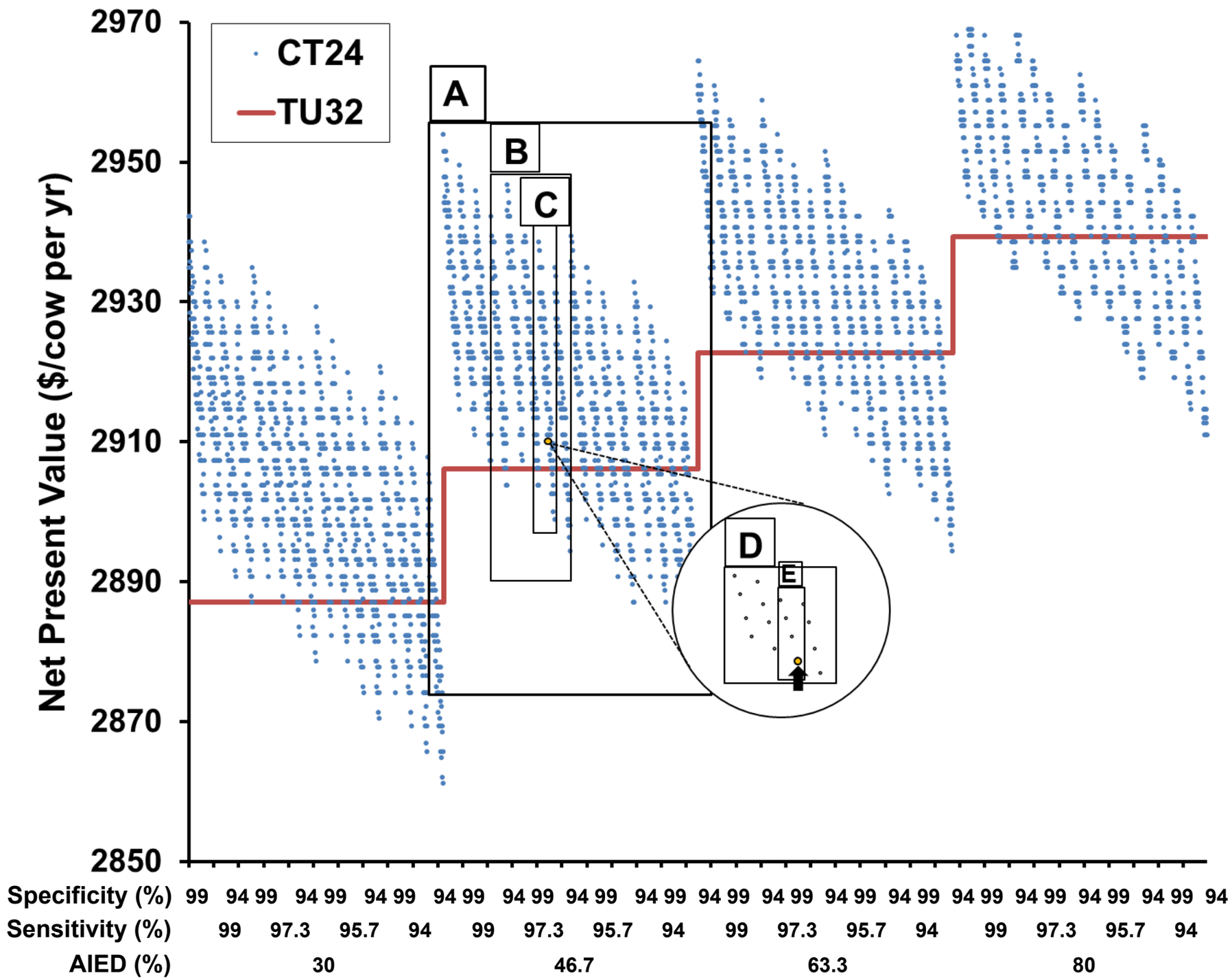
Desempenho reprodutivo



Giordano et al., 2013

Repro$ Plus aplicação 2

Desempenho econômico



Giordano et al., 2013

Repro$ Plus aplicação 2

Desempenho econômico

			$ por 1% ou $ 0.1	
	Base	Ampl	TQ31 vs PR39	TQ24 vs UR32
% Sensitividade	98/97	94-99	**+5.3**	**+4.5**
% Especificidade	98/97	94-99	**+3.1**	**+2.5**
% Perda prenhez	6/6.6	0-10	**-3.1**	**-2.5**
% Duvidosos	3.3/8.5	0-10	**-0.4**	**-0.3**
% Detec. Cio	50	30-80	**0.097**	**-0.220**
Custo Teste Quim. $	2.4	0.5-5	**-0.0175**	**-0.0192**

Giordano et al., 2013

Repro$ Plus application 2

Desempenho econômico

	Break even	
	TQ31 vs PR39	TQ24 vs UR32
% Sensitividade	**96.4**	**94.9**
% Especificidade	**95.1**	**93.2**
% Perda prenhez	**8.9**	**10.5**

Teste químico precoce

Lucrativo quando Sensibilidade >95%, Especificidade >93%, Perda precoce prenhez <11%

Giordano et al., 2013

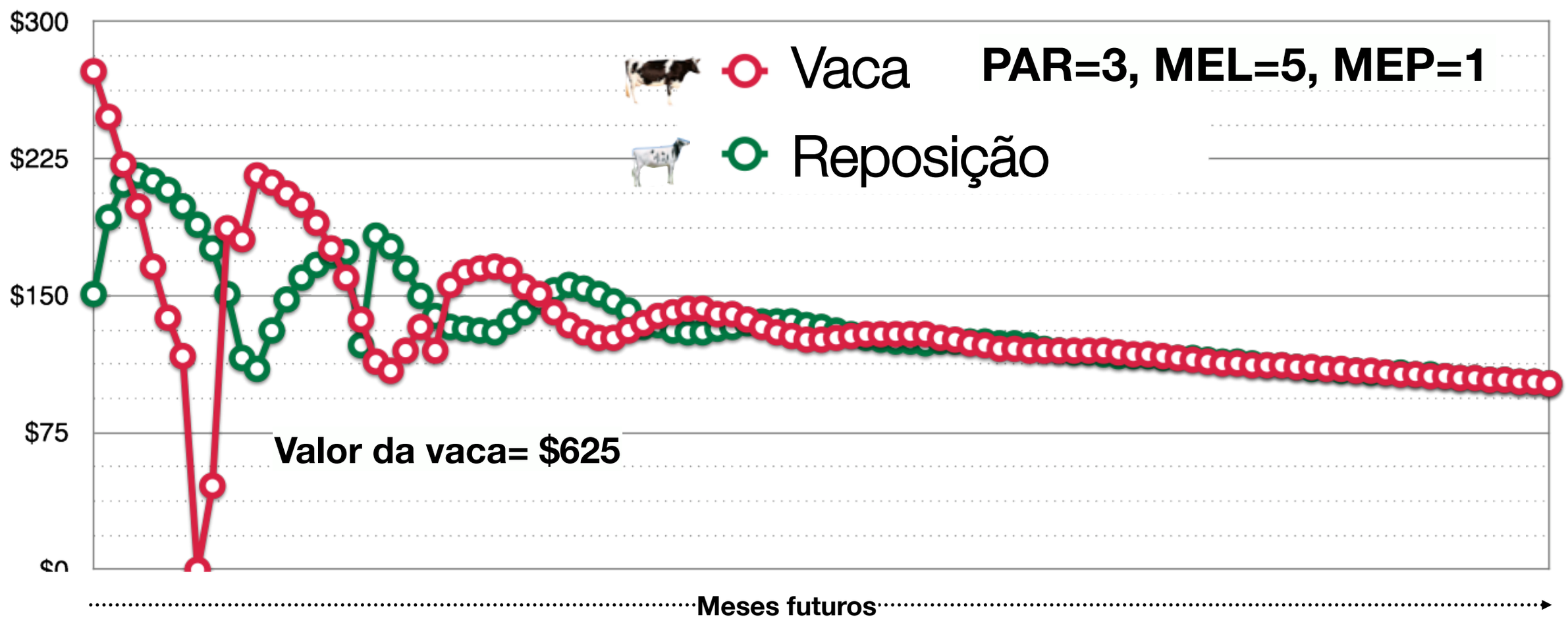
Valor econômico de uma vaca leiteira

Valor econômico de uma vaca leiteira

Retorno líquido estimado

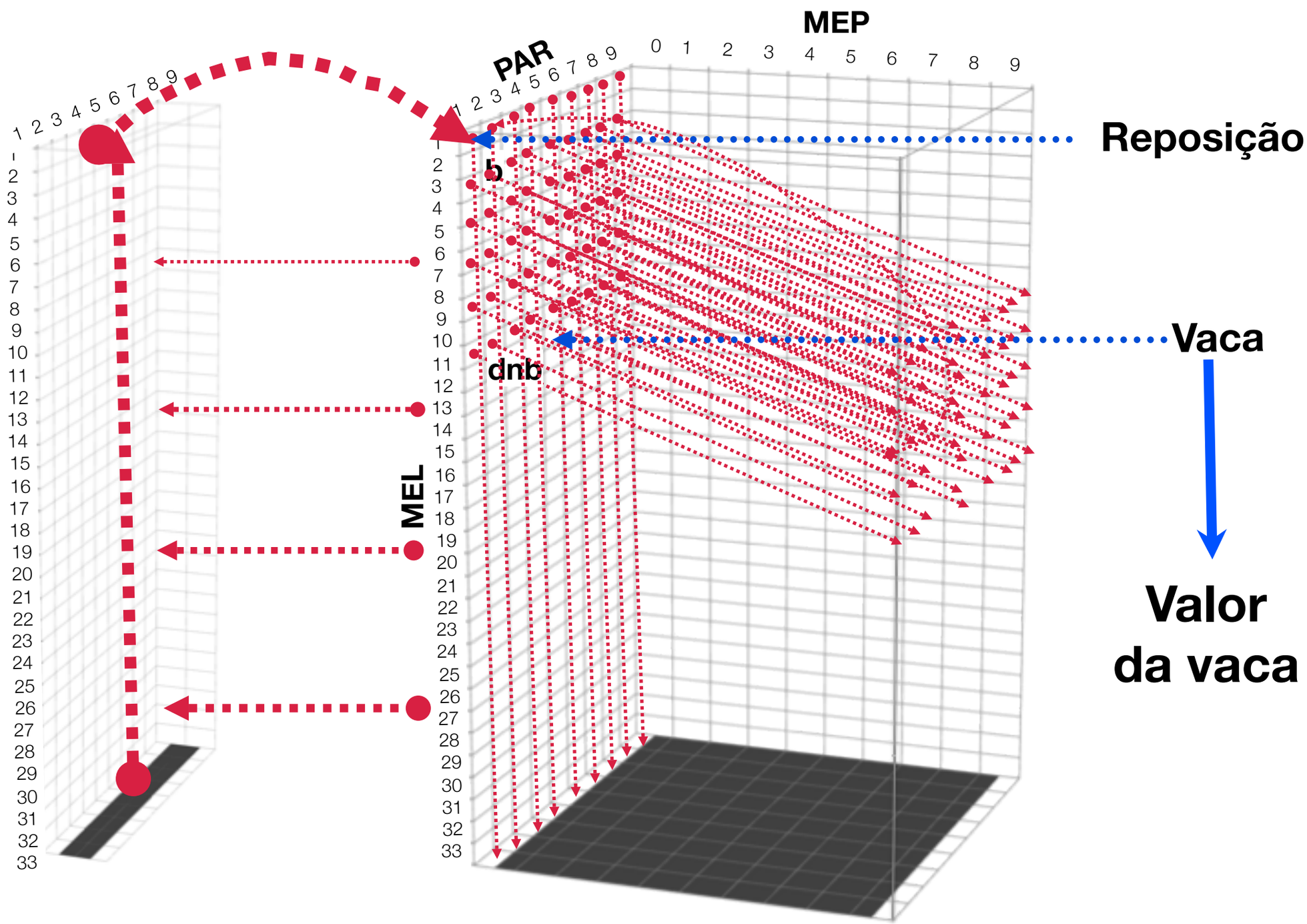
Retorno futuro descontado
Sempre comparado com reposição

Inclui custos da compra de reposição
Valor residual – Custo reposição



Princípio básico dos cálculos

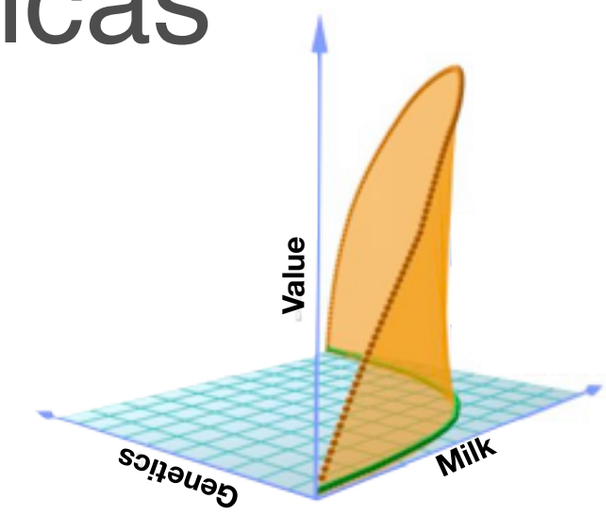
Markov-chains



Cabrera, 2012

Importância do valor da vaca

Implicações econômicas críticas



Manejo ótimo do rebanho

Manter ou trocar

Decisões cruciais

Tratar ou não

Inseminar ou não

Informação importante

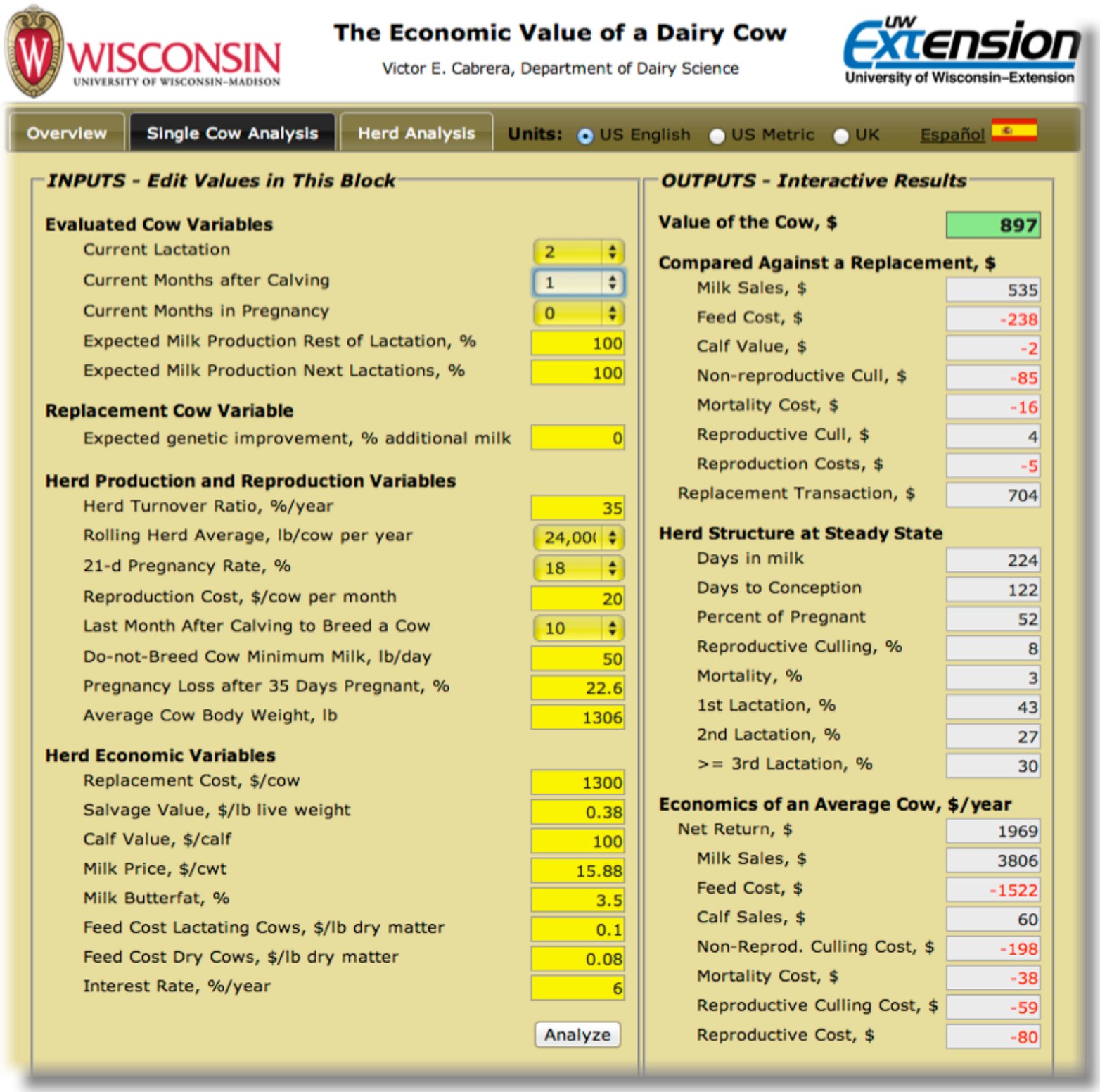
Valor de uma prenhez

Custo da perda de uma prenhez

Custo de cada dia em aberto

Valor econômico de uma vaca leiteira

Ferramenta online de suporte à decisão



WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

The Economic Value of a Dairy Cow

Victor E. Cabrera, Department of Dairy Science

UW Extension
University of Wisconsin–Extension

Overview | Single Cow Analysis | Herd Analysis | Units: US English | US Metric | UK | Español

INPUTS - Edit Values in This Block

Evaluated Cow Variables	
Current Lactation	2
Current Months after Calving	1
Current Months in Pregnancy	0
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	24,00
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	15.88
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

Analyze

OUTPUTS - Interactive Results

Value of the Cow, $	**897**
Compared Against a Replacement, $	
Milk Sales, $	535
Feed Cost, $	-238
Calf Value, $	-2
Non-reproductive Cull, $	-85
Mortality Cost, $	-16
Reproductive Cull, $	4
Reproduction Costs, $	-5
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
2nd Lactation, %	27
>= 3rd Lactation, %	30
Economics of an Average Cow, $/year	
Net Return, $	1969
Milk Sales, $	3806
Feed Cost, $	-1522
Calf Sales, $	60
Non-Reprod. Culling Cost, $	-198
Mortality Cost, $	-38
Reproductive Culling Cost, $	-59
Reproductive Cost, $	-80

Exemplo:
Valor dessa vaca de 2ª lac, no 1º MEL, vazia, é **$897**

Análise individual da vaca

Decisão para uma vaca específica

Fatores mais importantes

Outros Fatores

Valor em US $

Valor de descarte

Infos Adicionais

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	24,00
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

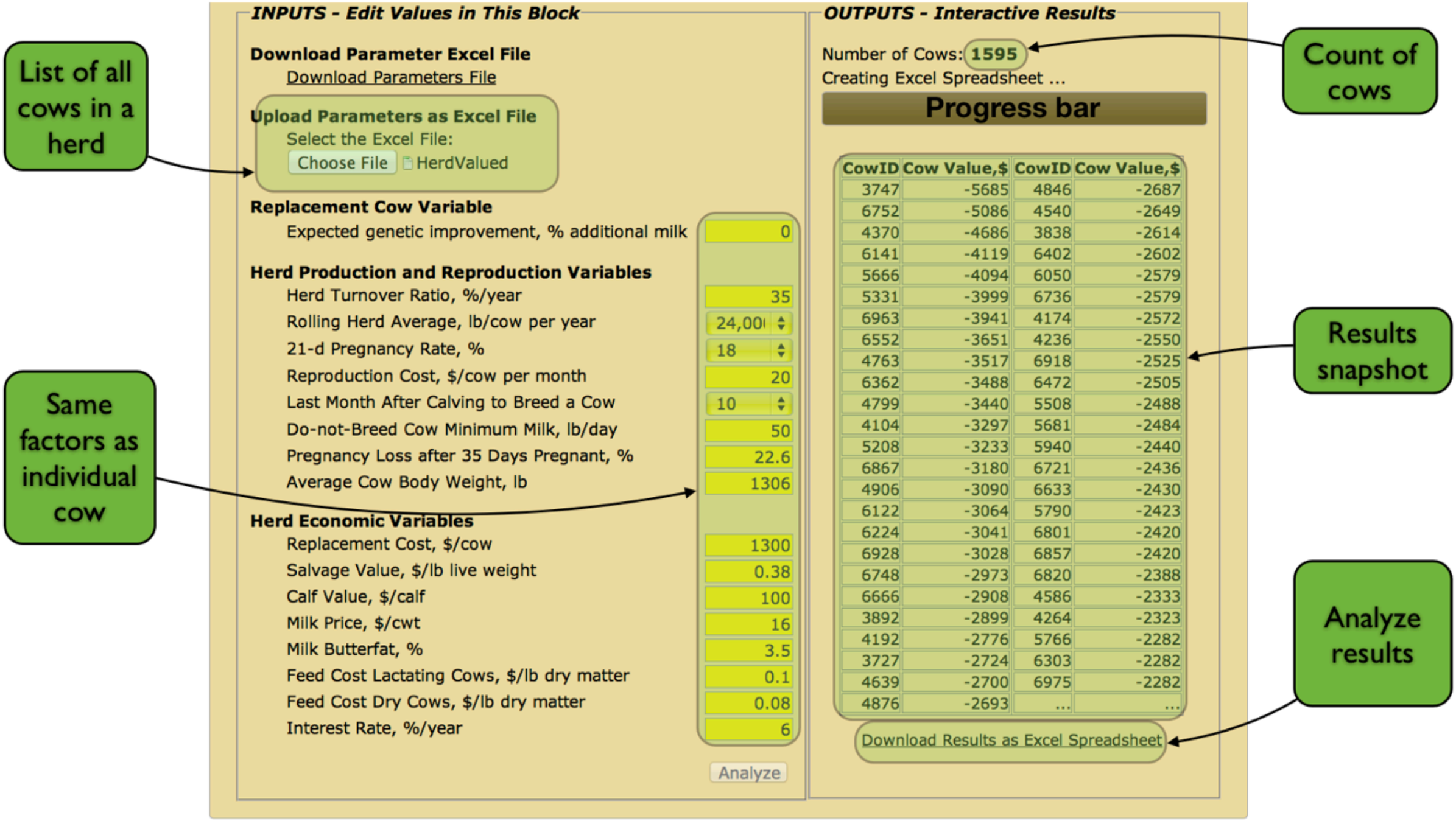
Analyze

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
2nd Lactation, %	27
> 3rd 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

Herd analysis

Decisions at the herd level

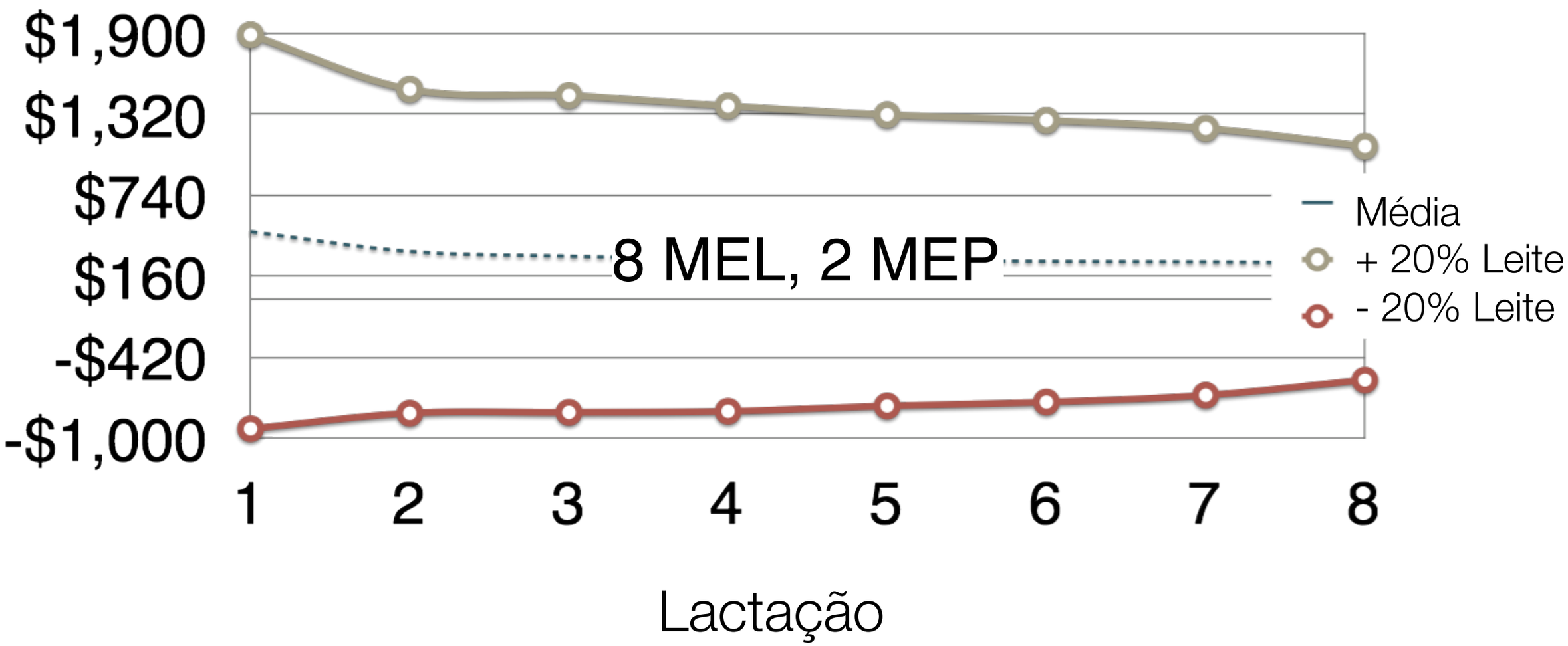


Valor econômico de uma vaca leiteira

Tomada de decisão

Descartar ou não

Valor positivo da vaca indica que ela vale mais que a reposição

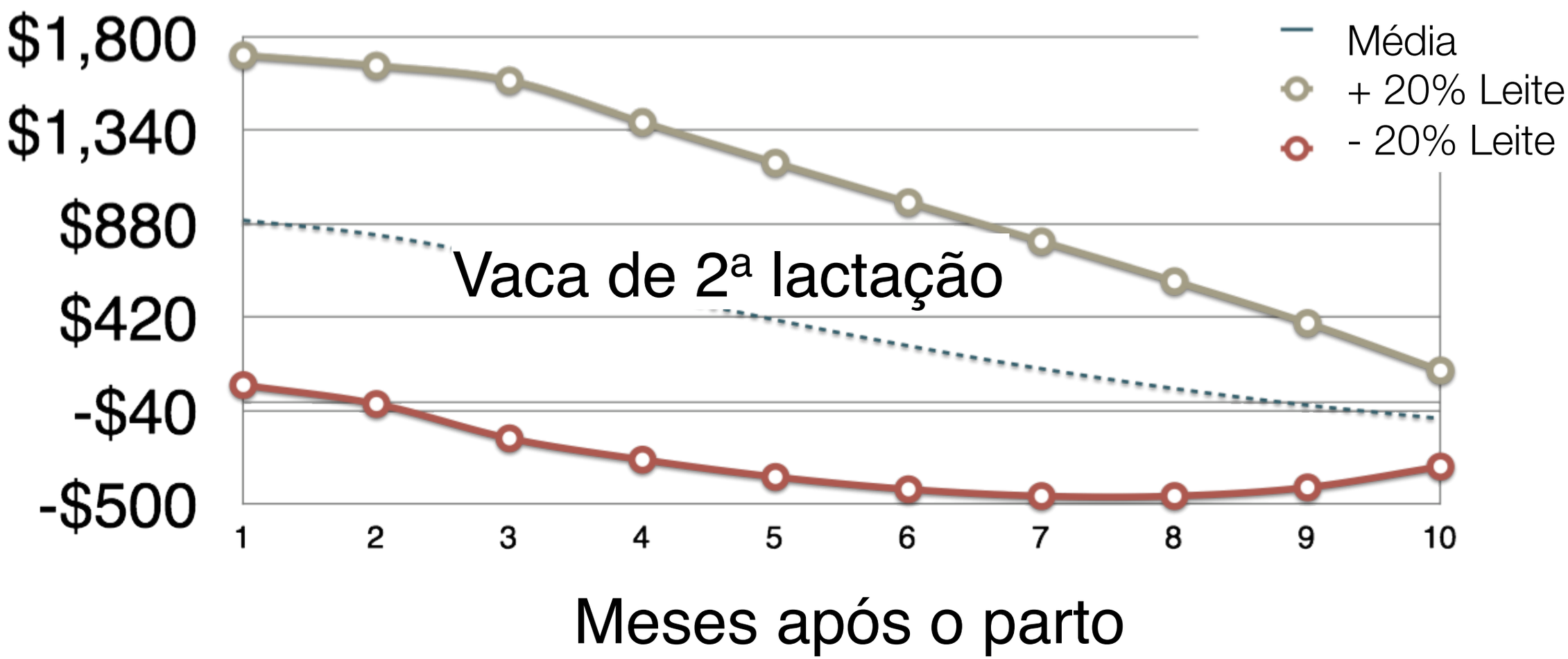


Valor econômico de uma vaca leiteira

Tomada de decisão

Inseminar ou não

Mais chances de obter
vaca de valor mais elevado

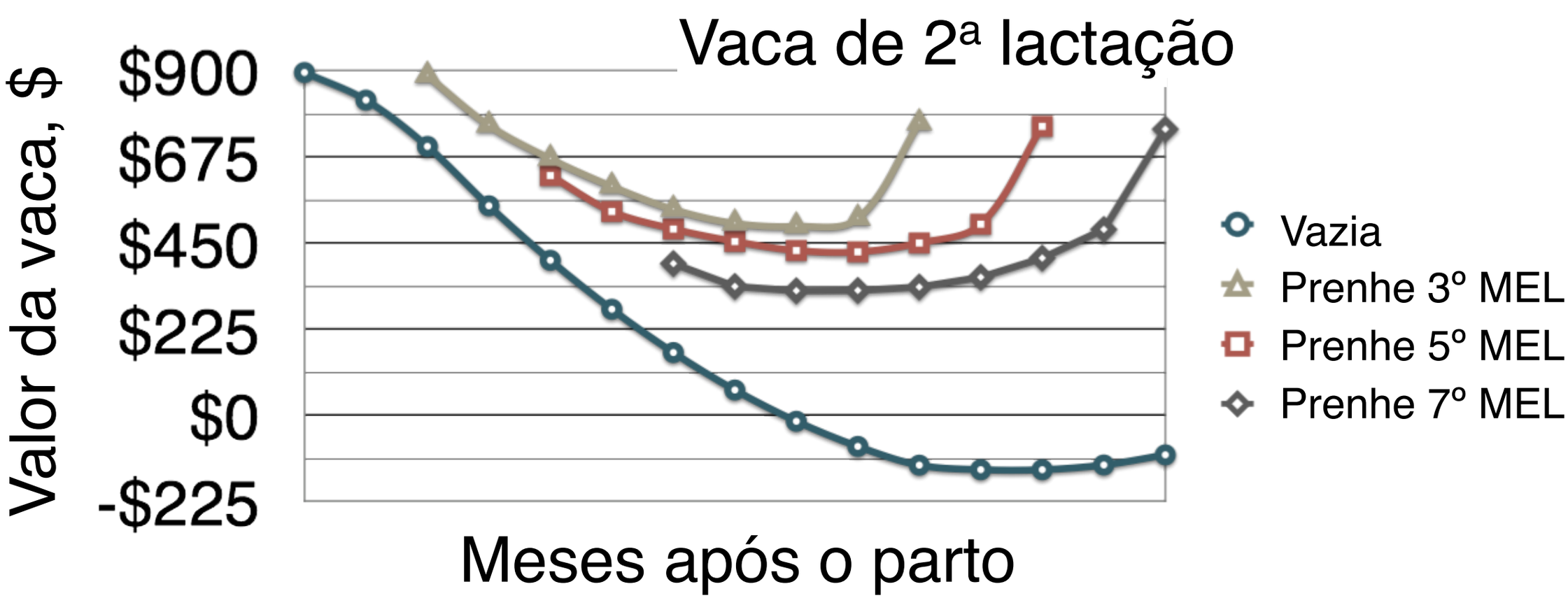


Valor econômico de uma vaca leiteira

Tomada de decisão

Tratar ou não

Mais investimentos possíveis para uma vaca de maior valor

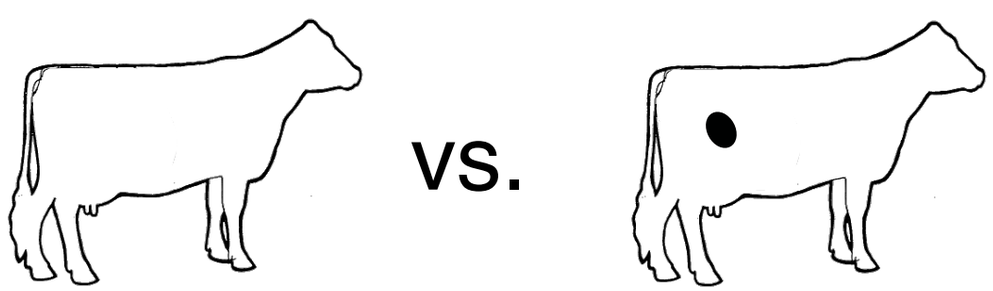


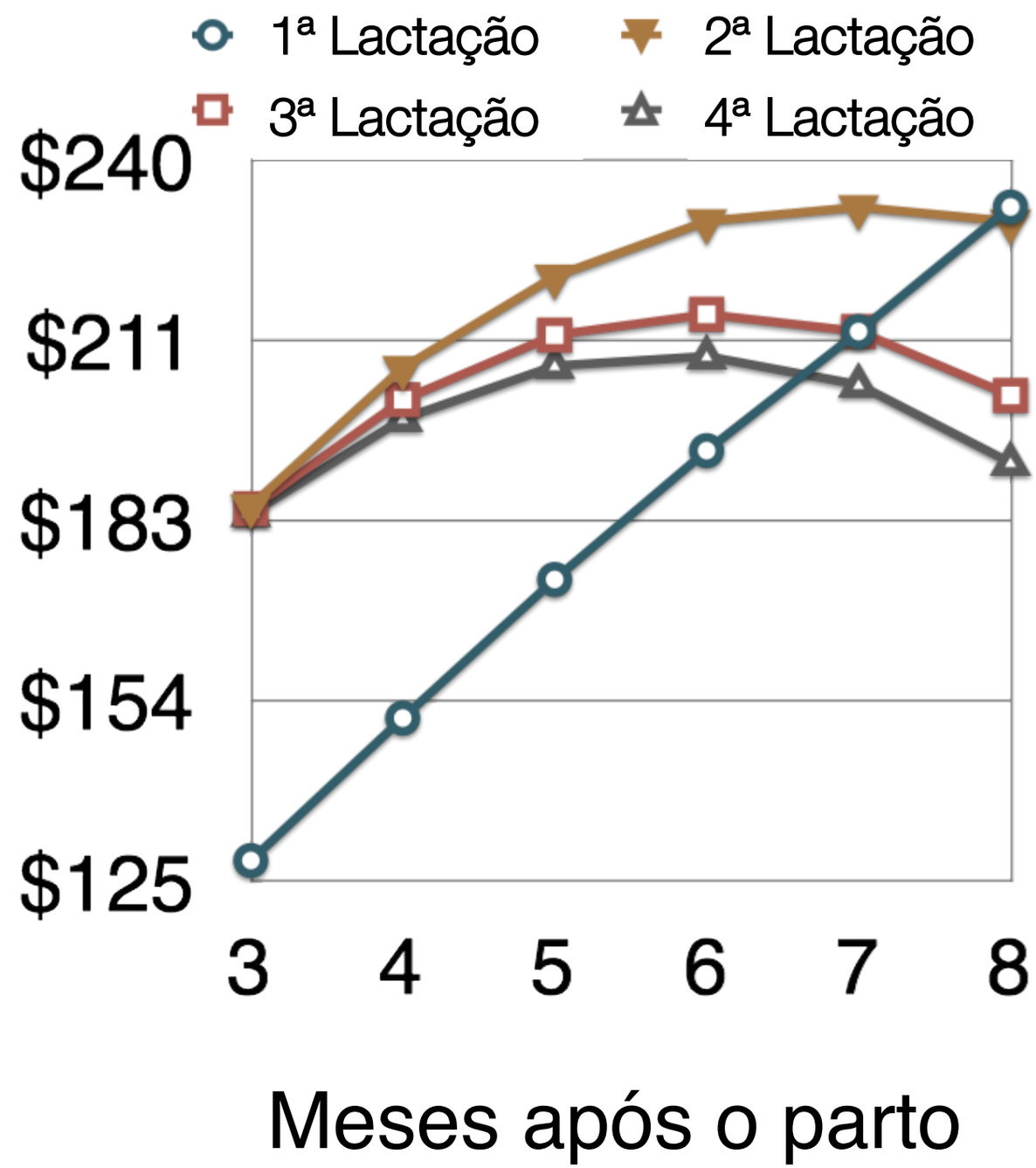
Valor econômico de uma vaca leiteira

Tomada de decisão

Cálculo do valor de uma prenhez

Diferença entre prenhe e vazia



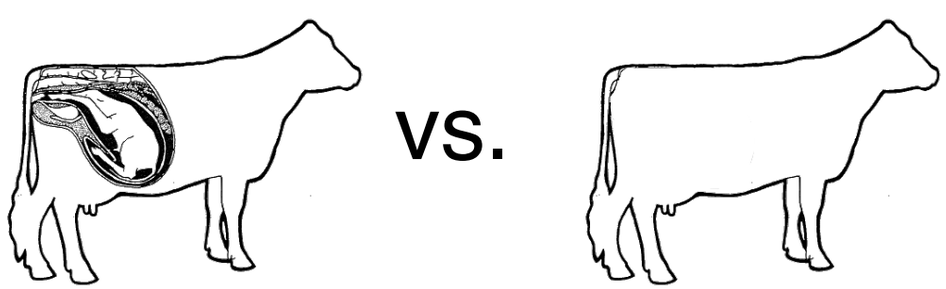


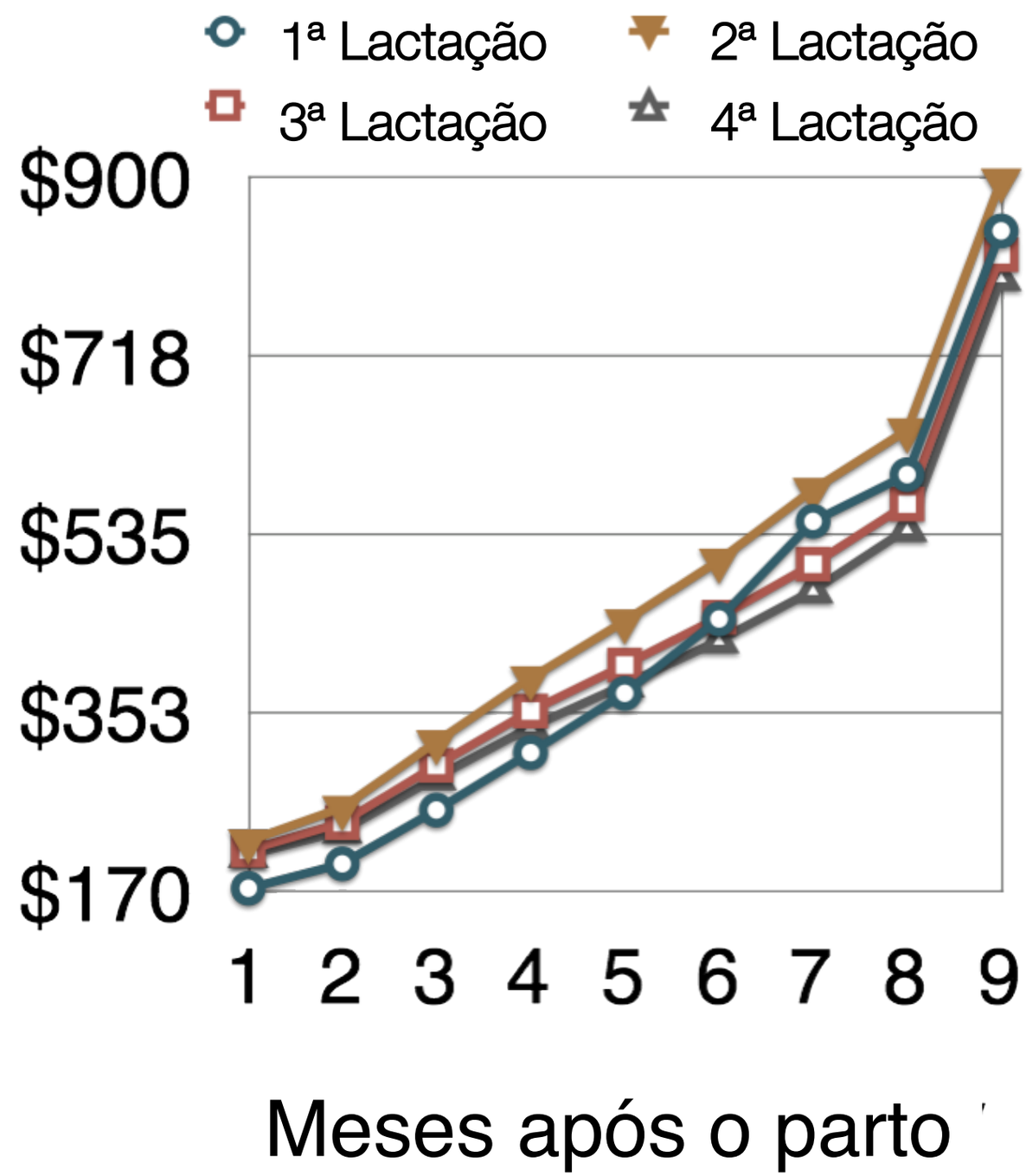
Valor econômico de uma vaca leiteira

Tomada de decisão

Cálculo da perda de uma prenhez

Diferença entre prenhe e vazia



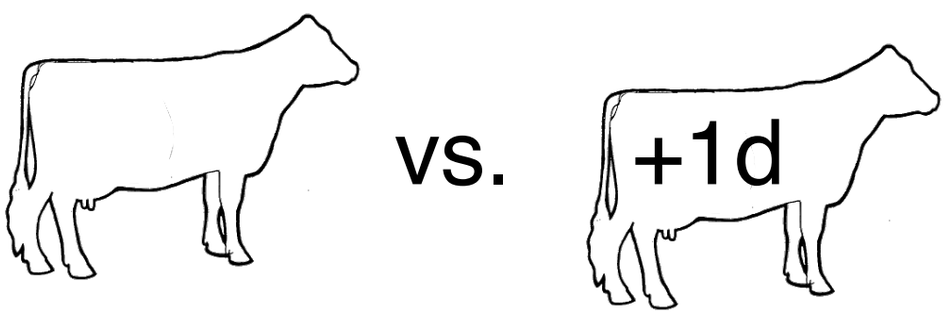


Valor econômico de uma vaca leiteira

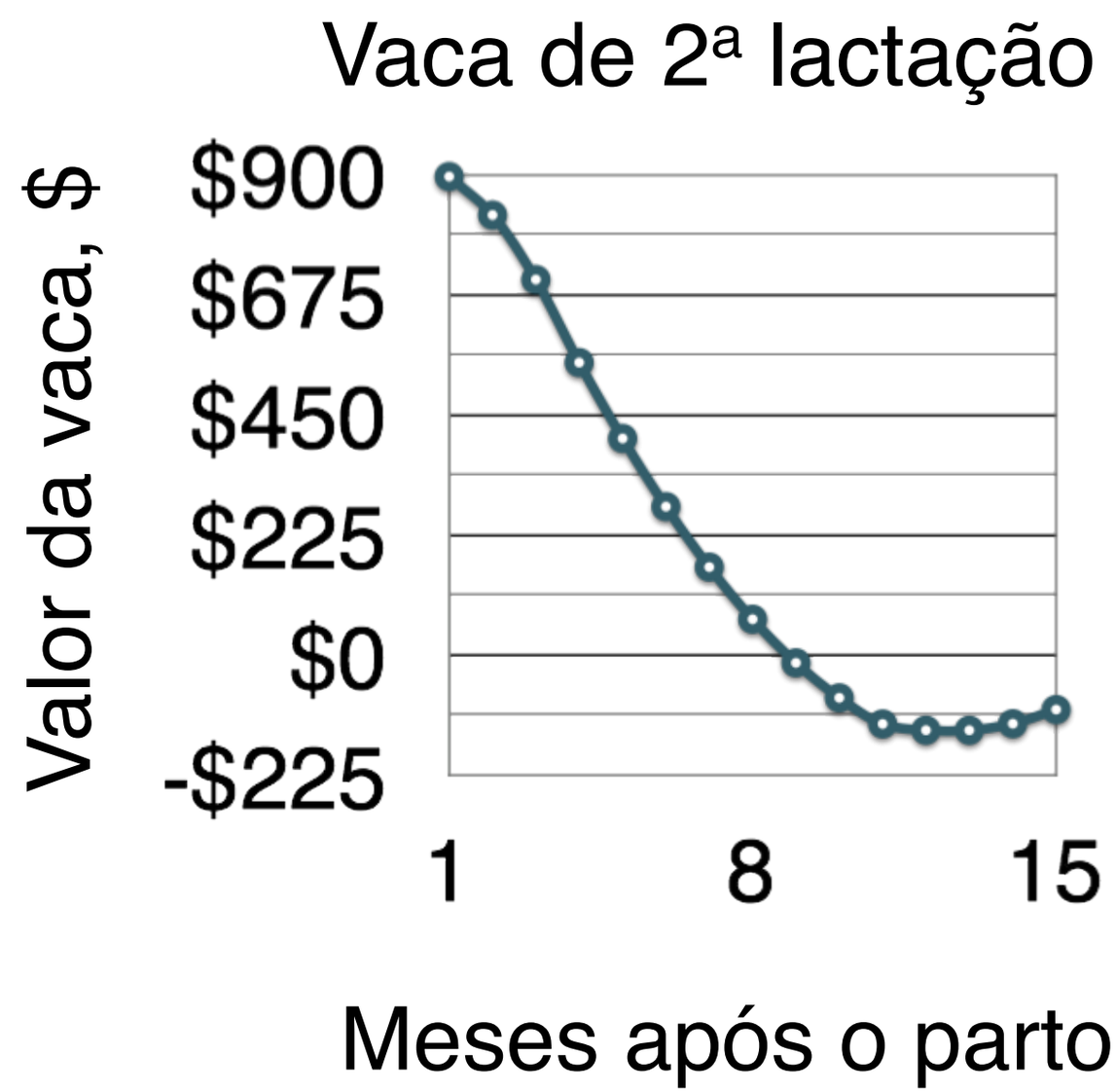
Tomada de decisão

Cálculo de um dia em aberto

Diferença entre valor de uma vaca vazia em 2 dias consecutivos



E.g., $5.16 (mês 2-3) e $4.26 (mês 5-6)



Guia para seleção de rebanhos

Decisões de inseminação e reposição

Current Lactation			Lifetime Average			Genetics		Test Day		
ME Milk	LS SCC	TCI	ME Milk	LS SCC	TCI	NM$	Gen Ind.	Milk	LS SCC	Exp. Rel. $
46513	1.1		46513	1.1		99				$4,576
43440	0.8		43440			142		78	0.9	$3,684
42577	1.9		42577			146		131	1.3	$3,571
42690	1.4		42690			567		109	0.9	$3,468
41259	1.6		41259			340		112	1.5	$3,156
42777	2.4		42777			20		125	2.2	$3,130
39417	5.4	2404	39616	0.5	2404	318		128	3.9	$278
33255	0.9	428	35944	4.6	428	71		131	1.2	$276
33183	1	-913	34185	1.7	-76	344				$273
31578	1.4	3517	34188	3.8	3517	285		119	1.4	$273
34011	3.8		34011	3.8						$270
33609	1.6		33609			185		59	1.9	$269
27406	0.8	612	36670	1.9	226	194		115	1	$265
33556	0.9		33556			124		100	0.8	$256
17783	1.2	-6148	26926	3.3	-6148			47	1.1	($3,473)
23564	2.1		23564					53	2.1	($3,654)
19546	1.7		19546					34	1.7	($5,128)
19173	1.6		19173					41	0.8	($5,151)
18936	1.6		18936					41	1.6	($5,384)
17321	1.3		17321					34	1.3	($5,958)

Novo relatório oferecido

a ≥ 3,500 produtores de leite em Wisconsin

Valor econômico das vacas calculado com a ferramenta

Obrigado!

© 2011 Wisconsin Milk Marketing Board, Inc.

Requerimentos nutricionais das vacas
Energia

Energia líquida total (EL_{total})
Energia requerida para mantença + produção de leite

$$EL_{total}\ (Mcal) = EL_{mantença} + EL_{leite}$$

$EL_{mantença}$
Função do PV

$$EL_{mantença} = 0.079 \times PV^{0.75}$$

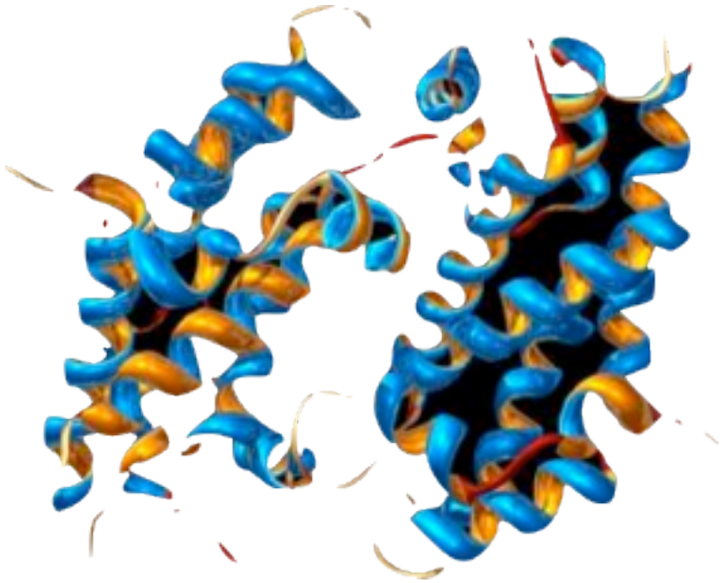
EL_{leite}
Função da produção de leite e gordura

$$EL_{leite} = Leite \times (0.36 + 0.0969 \times Gord\%)$$

NRC, 2001

Requerimentos nutricionais das vacas

Proteína



Proteína Bruta Total (PB_{total})

Proteína requerida para mantença + produção de leite

$$PB_{total}\ (g) = PB_{mantença} + PB_{leite}$$

$PB_{mantença}$

Função do PV

$$PB_{mantença} = 104.78 + 0.73 \times BW - 0.00015432 \times BW^2$$

PB_{leite}

Função da produção de leite e gordura

$$PB_{leite} = Leite \times (4586 + 1036 \times Gord\%)$$

McGilliard et al., 1983

Requerimentos de alimentos

Consumo de matéria seca

Consumo total de matéria seca (CMS)

Função dos DEL, PV e LCG 4%

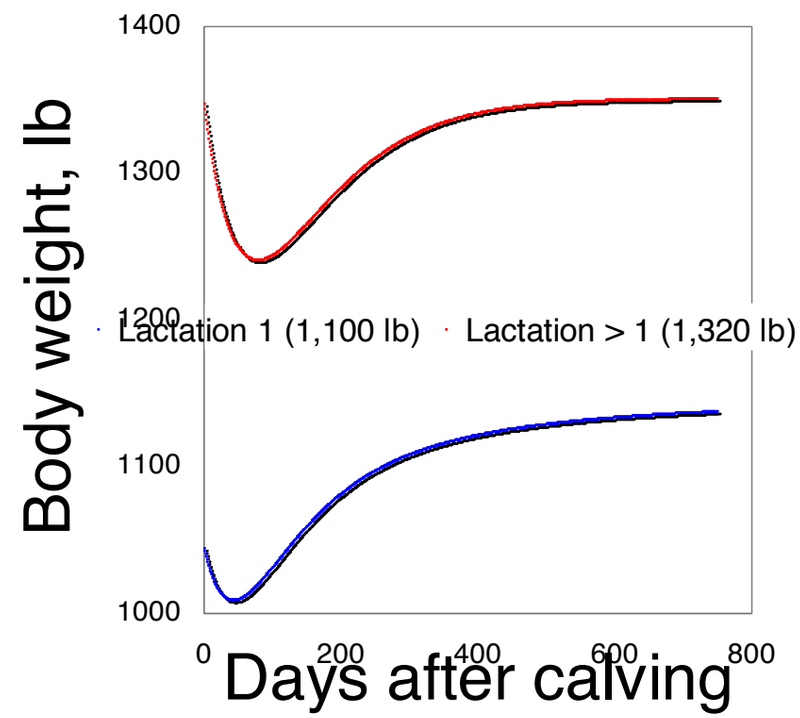
$$CMS\ (kg) = (0.372 \times 4\%\ LCG + 0.0968 \times PV^{0.75}) \times (1 - e^{(-0.192 \times ((DEL/7) + 3.67)})$$

$$4\%\ LCG = 0.4 \times Leite + 15 \times (Gord\%/100) \times Leite$$

NRC, 2001

Peso vivo

Medidas nem sempre disponíveis



Estimativa baseada em:

- Lactação
- DEL
- PV médio do lote

Korver et al., 1985, ajustado ao NRC, 2001

Custos adicionais e benefícios

Impactos das estratégias de agrupamento

Custos de manejo

- MO adicional
- Operações extras

Custos evitados

- Economia de aditivos

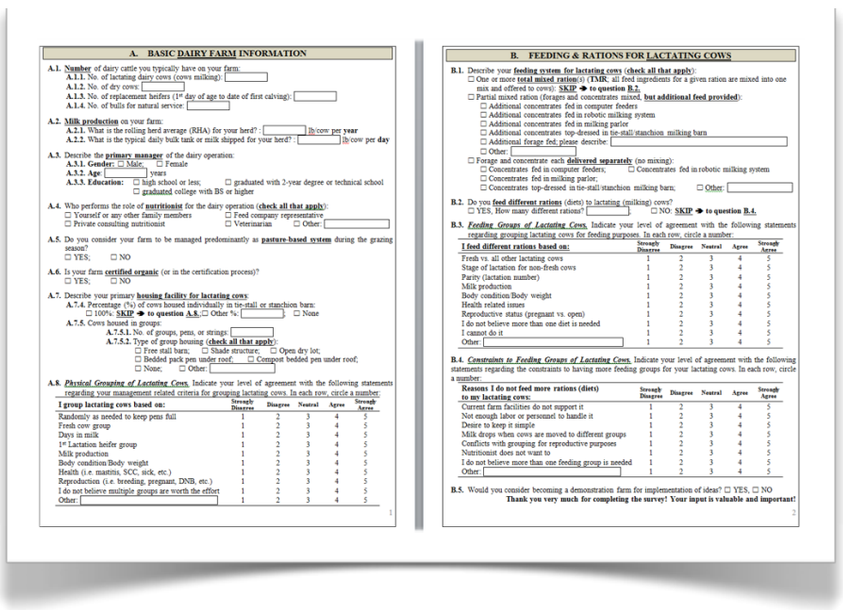
Perda de leite

- Interações sociais
- Mudanças nas dietas

Por que os produtores não agrupam vacas?

Tentando identificar os principais limitantes

Pesquisa de 2 páginas enviadas por e-mail



A. BASIC DAIRY FARM INFORMATION

A.1. Number of dairy cattle you typically have on your farm:
A.1.1. No. of lactating dairy cows (cows milking): [ ]
A.1.2. No. of dry cows: [ ]
A.1.3. No. of replacement heifers (1st day of age to date of first calving): [ ]
A.1.4. No. of bulls for natural service: [ ]

A.2. Milk production on your farm:
A.2.1. What is the rolling herd average (RHA) for your herd? : [ ] lb/cow per year
A.2.2. What is the typical daily bulk tank or milk shipped for your herd? : [ ] lb/cow per day

A.3. Describe the primary manager of the dairy operation:
A.3.1. Gender: ☐ Male; ☐ Female
A.3.2. Age: [ ] years
A.3.3. Education: ☐ high school or less; ☐ graduated with 2-year degree or technical school ☐ graduated college with BS or higher

A.4. Who performs the role of nutritionist for the dairy operation (check all that apply):
☐ Yourself or any other family members ☐ Feed company representative
☐ Private consulting nutritionist ☐ Veterinarian ☐ Other: [ ]

A.5. Do you consider your farm to be managed predominantly as pasture-based system during the grazing season?
☐ YES; ☐ NO

A.6. Is your farm certified organic (or in the certification process)?
☐ YES; ☐ NO

A.7. Describe your primary housing facility for lactating cows:
A.7.4. Percentage (%) of cows housed individually in tie-stall or stanchion barn:
☐ 100%: SKIP ➔ to question A.8.; ☐ Other %: [ ]; ☐ None
A.7.5. Cows housed in groups:
A.7.5.1. No. of groups, pens, or strings: [ ]
A.7.5.2. Type of group housing (check all that apply):
☐ Free stall barn; ☐ Shade structure; ☐ Open dry lot;
☐ Bedded pack pen under roof; ☐ Compost bedded pen under roof;
☐ None; ☐ Other: [ ]

A.8. Physical Grouping of Lactating Cows. Indicate your level of agreement with the following statements regarding your management related criteria for grouping lactating cows. In each row, circle a number:

I group lactating cows based on:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Randomly as needed to keep pens full	1	2	3	4	5
Fresh cow group	1	2	3	4	5
Days in milk	1	2	3	4	5
1st Lactation heifer group	1	2	3	4	5
Milk production	1	2	3	4	5
Body condition/Body weight	1	2	3	4	5
Health (i.e. mastitis, SCC, sick, etc.)	1	2	3	4	5
Reproduction (i.e. breeding, pregnant, DNB, etc.)	1	2	3	4	5
I do not believe multiple groups are worth the effort	1	2	3	4	5
Other: [ ]	1	2	3	4	5

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B. FEEDING & RATIONS FOR LACTATING COWS

B.1. Describe your feeding system for lactating cows (check all that apply):
☐ One or more total mixed ration(s) (TMR; all feed ingredients for a given ration are mixed into one mix and offered to cows): SKIP ➔ to question B.2.
☐ Partial mixed ration (forages and concentrates mixed, but additional feed provided):
☐ Additional concentrates fed in computer feeders
☐ Additional concentrates fed in robotic milking system
☐ Additional concentrates fed in milking parlor
☐ Additional concentrates top-dressed in tie-stall/stanchion milking barn
☐ Additional forage fed; please describe: [ ]
☐ Other: [ ]
☐ Forage and concentrate each delivered separately (no mixing):
☐ Concentrates fed in computer feeders; ☐ Concentrates fed in robotic milking system
☐ Concentrates fed in milking parlor;
☐ Concentrates top-dressed in tie-stall/stanchion milking barn; ☐ Other: [ ]

B.2. Do you feed different rations (diets) to lactating (milking) cows?
☐ YES, How many different rations? [ ]; ☐ NO: SKIP ➔ to question B.4.

B.3. Feeding Groups of Lactating Cows. Indicate your level of agreement with the following statements regarding grouping lactating cows for feeding purposes. In each row, circle a number:

I feed different rations based on:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Fresh vs. all other lactating cows	1	2	3	4	5
Stage of lactation for non-fresh cows	1	2	3	4	5
Parity (lactation number)	1	2	3	4	5
Milk production	1	2	3	4	5
Body condition/Body weight	1	2	3	4	5
Health related issues	1	2	3	4	5
Reproductive status (pregnant vs. open)	1	2	3	4	5
I do not believe more than one diet is needed	1	2	3	4	5
I cannot do it	1	2	3	4	5
Other: [ ]	1	2	3	4	5

B.4. Constraints to Feeding Groups of Lactating Cows. Indicate your level of agreement with the following statements regarding the constraints to having more feeding groups for your lactating cows. In each row, circle a number:

Reasons I do not feed more rations (diets) to my lactating cows:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Current farm facilities do not support it	1	2	3	4	5
Not enough labor or personnel to handle it	1	2	3	4	5
Desire to keep it simple	1	2	3	4	5
Milk drops when cows are moved to different groups	1	2	3	4	5
Conflicts with grouping for reproductive purposes	1	2	3	4	5
Nutritionist does not want to	1	2	3	4	5
I do not believe more than one feeding group is needed	1	2	3	4	5
Other: [ ]	1	2	3	4	5

B.5. Would you consider becoming a demonstration farm for implementation of ideas? ☐ YES, ☐ NO
Thank you very much for completing the survey! Your input is valuable and important!

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Resultados (respostas)

~200 WI

~59 MI

30 to 35% fornecendo a mesma dieta a todas as VL

1	Percepção de perda de leite
2	Manter manejo simples
3	Conflitos com grupo em período de serviço
4	Instalações não permitem
5	Entendem que não precisam
6	Nutricionistas não querem
7	MO

Cotreras-Govea et al., 2013

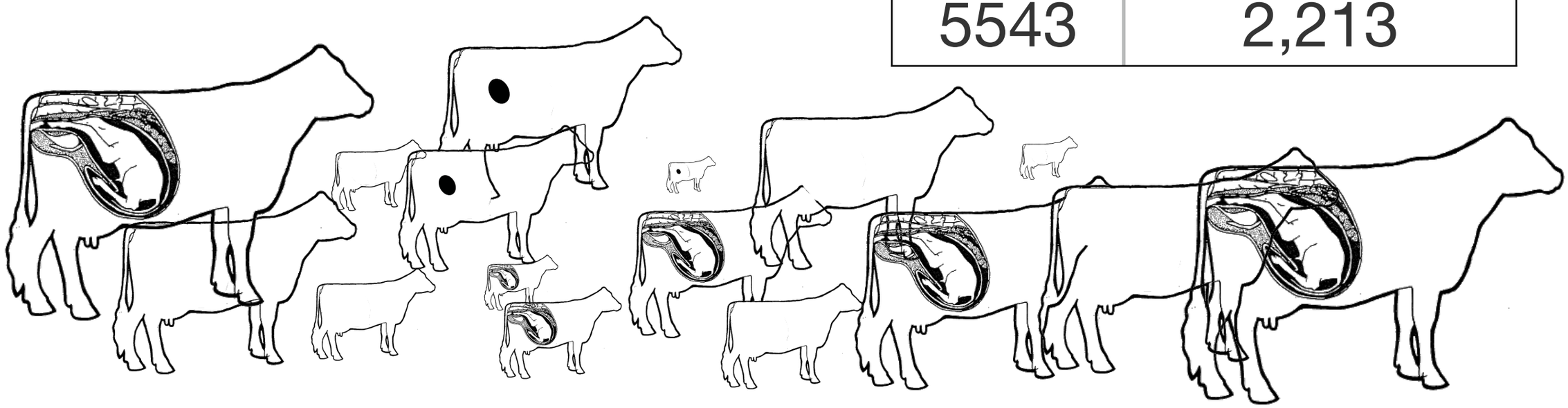
Valor econômico de todas as vacas do rebanho

Valores ranqueados para ajudar na decisão

Valor individual das vacas nos rebanhos

Candidatas a reposição

Melhores vacas

Decisões de tratamento

5892	-1,123
6344	-243
435	-10
221	269
5543	2,213