Economic Grouping Strategies for Feeding Lactating Dairy Cattle
&
Tweaking Your Reproductive Programs for Improved Profit

Victor E. Cabrera, PhD
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WISCONSIN
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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 relationship with county-based Extension faculty, dairy producers, consultants, and related industry.

Latest Projects

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- LGM-Dairy
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- UW-Extension Dairy News

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- New Graduate Student Position

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Professional Page

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TOOLS

Dairy Management Tools

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Grouping Cows ➔ More Profit

- ↗ Nutrient use efficiency
- ↙ Feed costs
- ↙ Nutrient excretion
- ↙ Overfed animals

Do You Want to Analyze Your Farm?

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Grouping Strategies for Feeding Lactating Dairy Cattle

Overview | Upload Farm Details | Group Cows | Reap Benefits

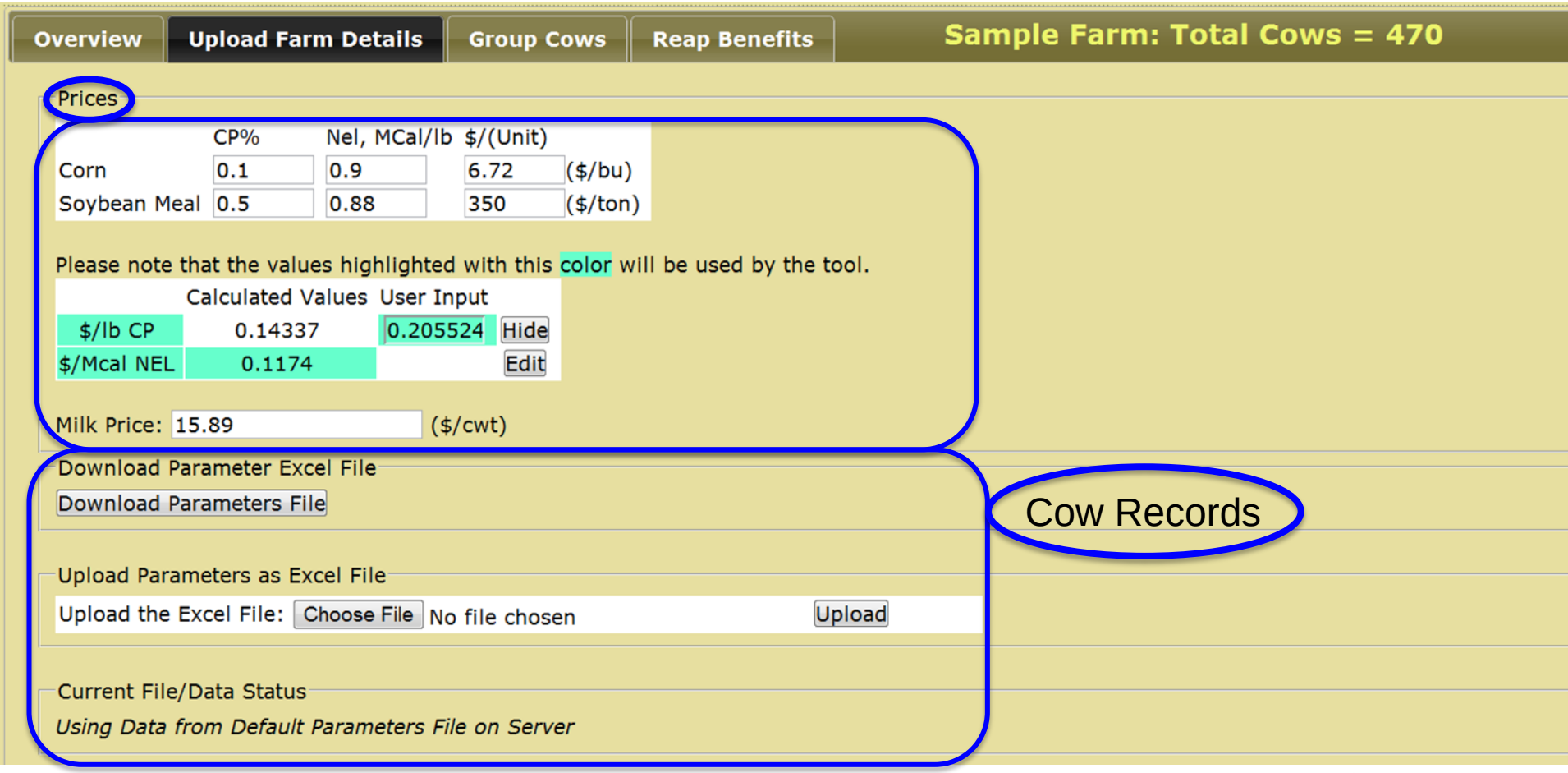
Sample Farm: Total Cows = 470

This tool evaluates feeding grouping strategies in lactating cows. It uses different criteria to group, finds the cows to conform a group (optimizes), suggests a group diet ration based on Net Energy (NEL, MCal/lb) and Crude Protein (CP, %), compute the expected Income Over Feed Cost (IOFC), and the additional economic benefit of feed grouping after management of additional groups and an expected milk depression on lactating cows regrouped.

In order to use this tool a herd test file is needed. This should contain information regarding Cow ID, Lactation, Days in Milk (DIM), Milk Produced, and Milk Fat Content. Optionally, for more accurate calculations, Body Weight (BW) could be added (if BW is not provided, the tool calculates BW based on lactation and DIM after a user-entered average BW for primiparous and multiparous cows). The tab with name upload farm details helps the user upload an excel file with those parameters. It is suggested to first download the parameters file to a local computer and then use this as a template to enter farm specific data. Once the data are entered, the file could be back uploaded. The tool will indicate which file is being used. The number of lactating cows in the file will be automatically counted and displayed. Also, in this tab, the user defines indirectly the price of feed energy ($/MCal) and feed protein ($/ lb CP), which are based on nutritive content and prices of refereed feeds (Corn and Soybean meal). The user can over-write these values if desired.

Once the data have been entered, the user could move to the tab with name 'Group Cows'. This tab is self-explanatory and follows a decision tree structure to help the user analyze grouping strategies. After following the questions in the decision tree, the user could hit the 'Analyze' button and get the results in the 'Reap Benefits' tab. This last tab of the tool ('Reap Benefits') displays the economic benefit of different group strategies compared to the farm defined current strategy.

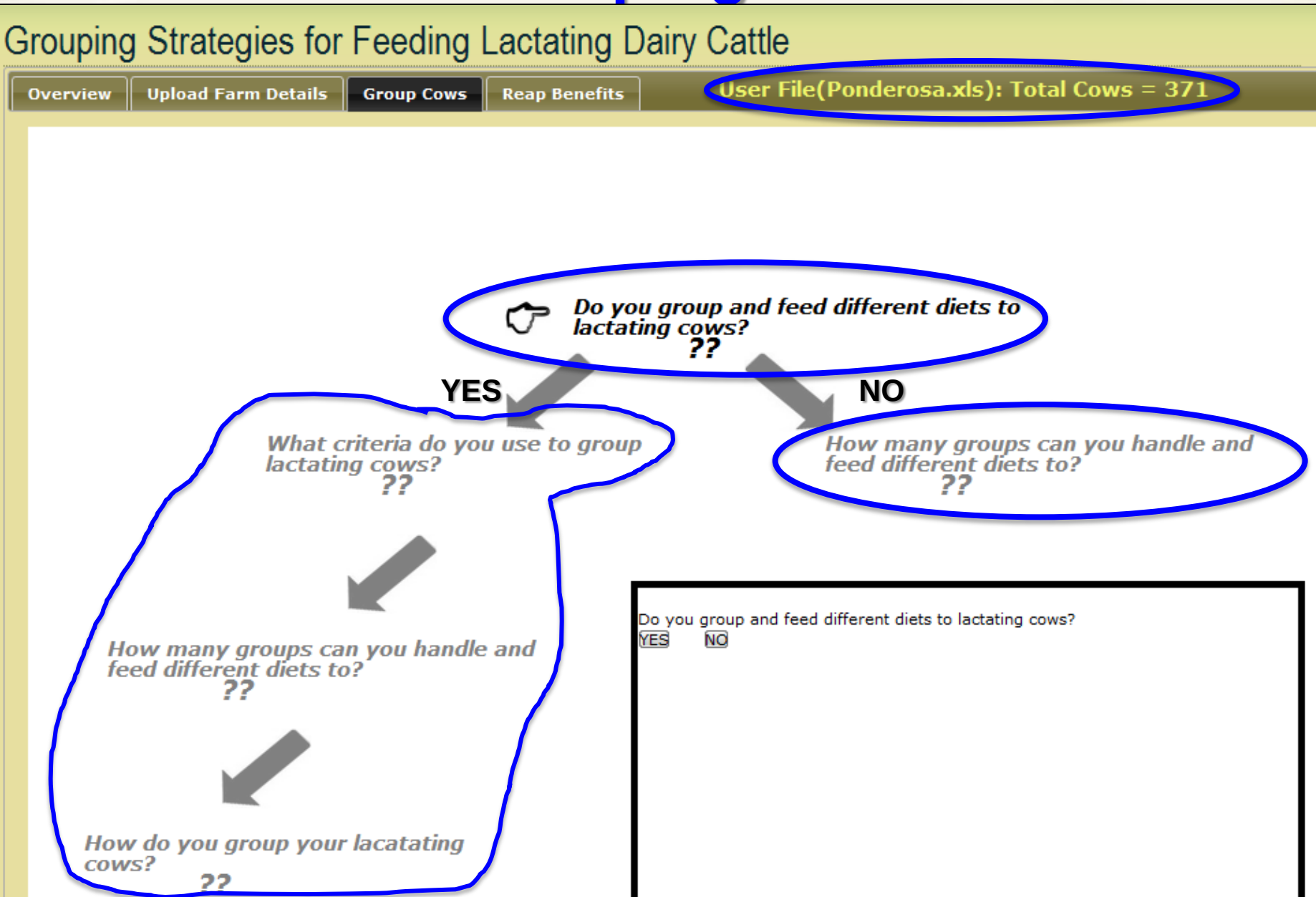
Customize Your Farm



Your Farm Cow Records

COW ID	Lactation	Days in Milk	Milk, lb	Fat, %	Body Weight, lb (optional)
6234	1	84	62	4.2	
132	7	118	73	4.6	
6196	1	198	85	4.3	
5516	4	199	114	3.1	
5561	4	280	108	3.1	
5961	2	173	91	3.5	
6149	1	253	88	2.9	
5667	4	138	92	3.7	
5960	3	159	110	3	
5817	2	244	115	4.1	
6191	1	190	90	4.4	

Your Farm Grouping Decisions



Currently No Grouping

BACK

How many groups can you handle and feed different diets to?

- Two
- (•) Three
- Four

Please enter the size of each group that you can handle.

Group	Group1	Group2	Group3
Size	120	100	151

Please enter the CP and NEL values currently being used:

NE (Mcal NEL/lb)	CP(%)
0.82	18

Additional cost (labor, management, and machinery) of feeding and grouping lactating cows into 3 groups instead of 1 ($/herd/month): 1000

Estimate milk depression caused due to re-location of lactating cows :

Loss of milk production (lb/d): 5

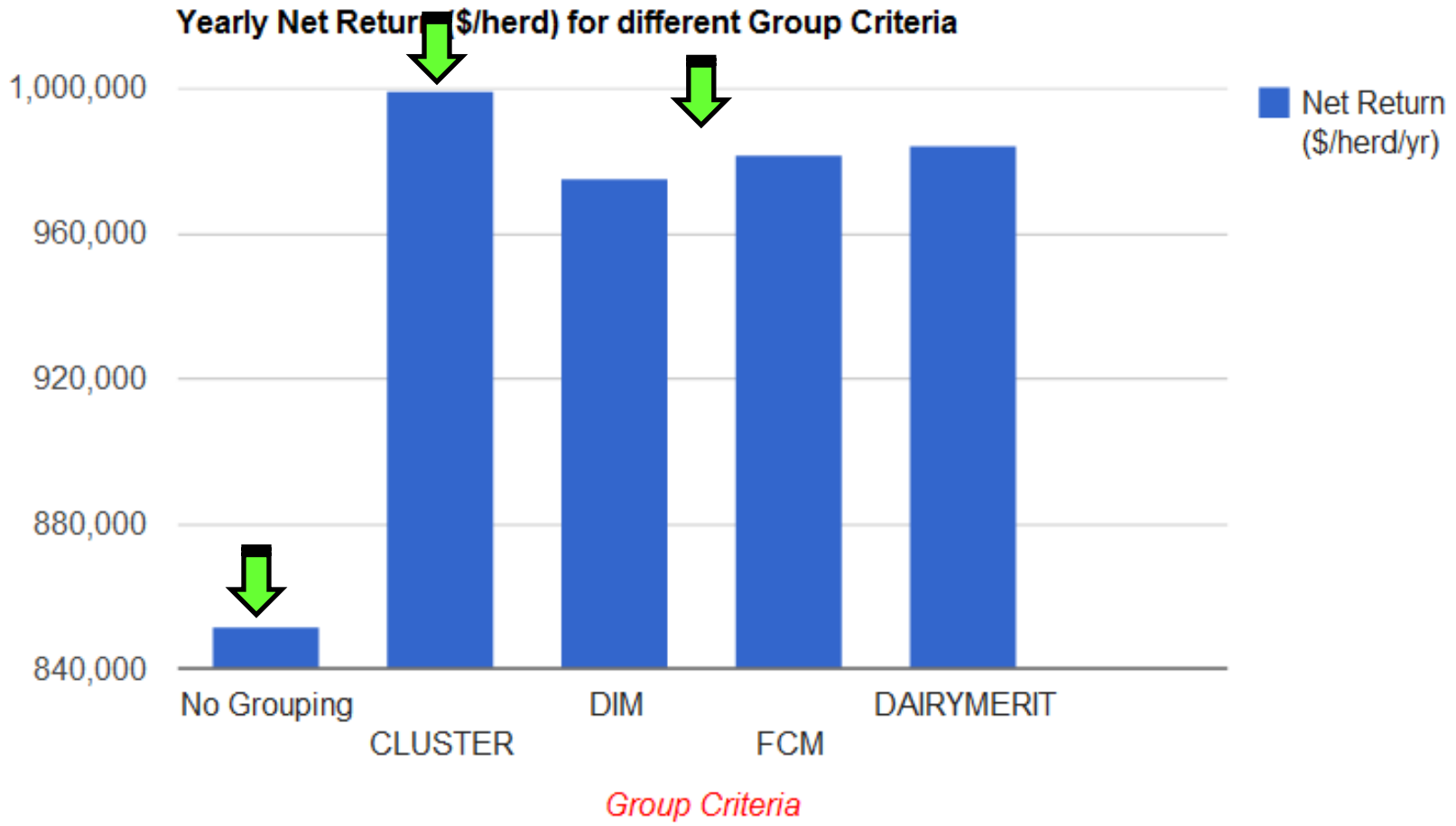
Number of days the loss continues (d): 4

Would you save money because of using less feed addtives with more groups? If yes, how much would you save? 100 $/herd/month

Press analyze to know the benefits of grouping.

Analyze

No Grouping vs. 3 Groups!



Currently 2 Groups

What criteria do you use to group lactating cows?

- CLUSTER
- MERIT
- DIM
- FCM

NEXT

What are the size and nutrients of your current groups?

Groups	Size	NE (Mcal NEL/lb)	CP (%)
Total	371		
Group1	180	0.82	18
Group2	191	0.77	17

How many groups do you have f

- Two
- Three
- Four

Additional cost (labor, management, and machinery) of grouping lactating cows and feeding($/herd/month): 500

Estimate milk depression caused due to re-location of lactating cows:

Loss of milk production (lb/d): 5

Number of days the loss continues (d): 4

Would you save money because of using less feed addtives with more groups? If yes, how much would you save: 0 $/herd/month

How many groups can you handl

- Two
- Three
- Four

Please enter the size of each gr

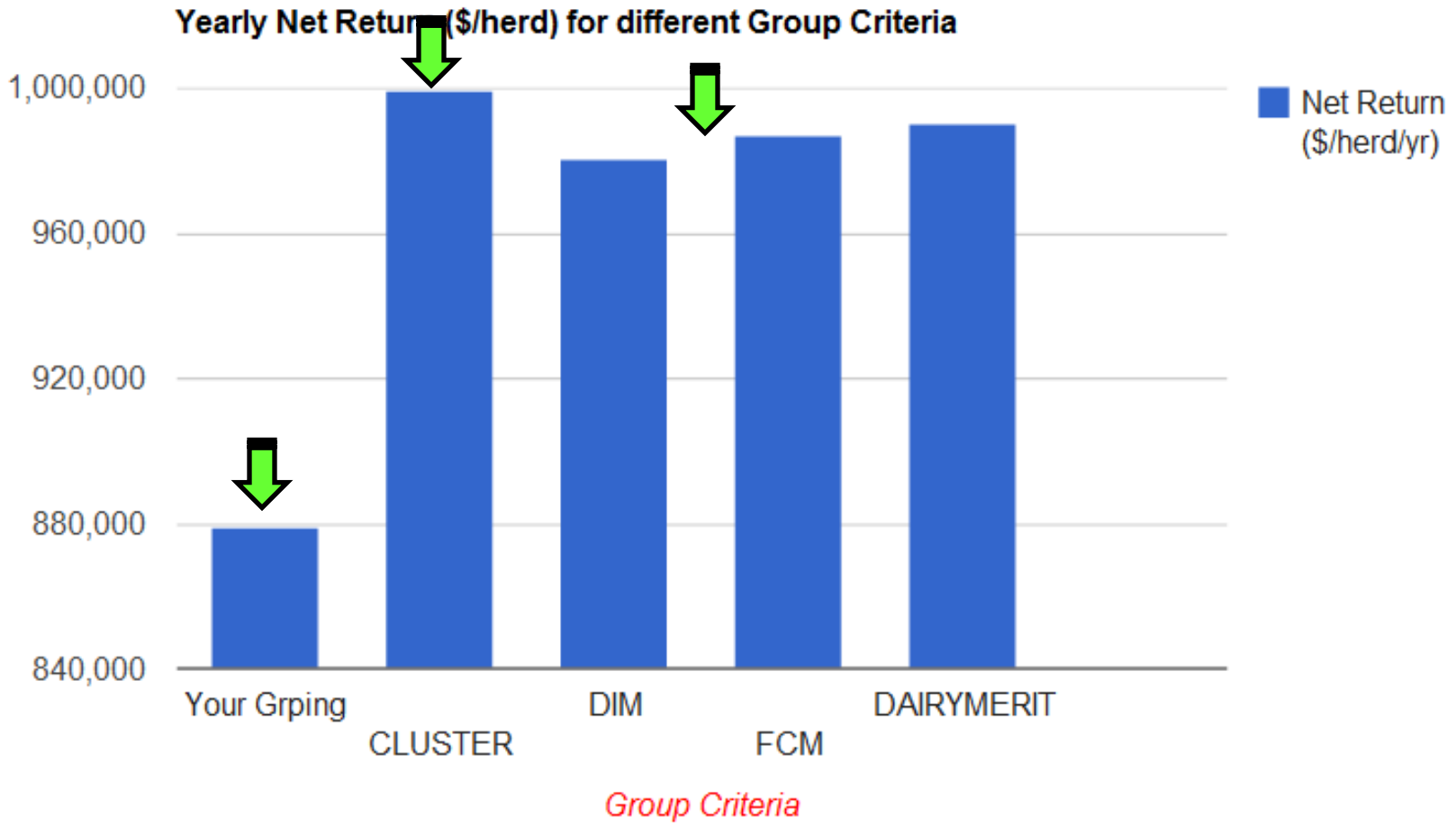
Group	Size
Group1	100
Group2	100
Group3	171

Press analyze to know how you can gain more by grouping better.

Analyze

NEXT

2 Groups vs. 3 Groups!



Details of Your Optimized Grouping

Group Criteria	Group Number	Number Cows	NEL (Mcal/lb)	CP (%)	IOFC	Cost of Management	Cost Milk Depression ($/cow/d)	Savings on Additives	Total ($/herd/yr)
YOUR GROUPING (Current Diets)	1	180	0.82	18.00	5.33				
	2	191	0.77	17.00	7.59				
	Mean		0.79	17.49	6.49	-0.00	-0.00	0.00	6.49	878,902
CLUSTER	1	100	0.71	16.18	9.53				
	2	171	0.68	15.10	7.68				
	3	100	0.63	13.61	4.73				
	Mean		0.68	14.99	7.38	-0.04	-0.01	0.00	7.38	999,454
DIM	1	171	0.70	15.92	8.18				
	2	100	0.68	15.33	7.52				
	3	100	0.66	14.58	5.56				
	Mean		0.69	15.40	7.30	-0.04	-0.01	0.00	7.24	980,216
FCM	1	100	0.71	16.13	9.60				
	2	171	0.68	15.25	7.46				
	3	100	0.64	13.90	4.89				
	Mean		0.68	15.12	7.34	-0.04	-0.01	0.00	7.29	986,749
DAIRYMERIT	1	171	0.70	15.95	8.82				
	2	100	0.67	14.86	7.20				
	3	100	0.64	13.70	5.04				
	Mean		0.68	15.05	7.37	-0.04	-0.01	0.00	7.31	989,987

Your Farm Data

GROUP	1 (n=100)	2 (n=171)	3 (n=100)
CP (%)	16.18132	15.10323	13.60792
NE (Mcal/lb)	0.712018	0.379536	0.636022
	5720	5988	6079
	6160	5776	5914
	5753	3436	5969
	3406	5841	5754
COWID	5693	5896	5412
	5117	6190	6125
	5454	5489	95
	5459	6110	5733
	5926	6165	5927

Questions?

Tweaking Your Reproductive Programs for Improved Profit

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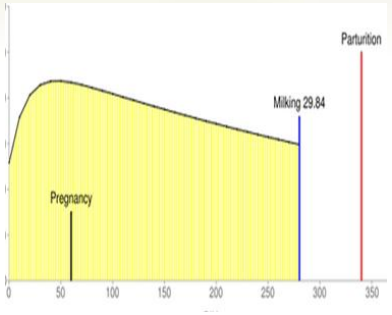
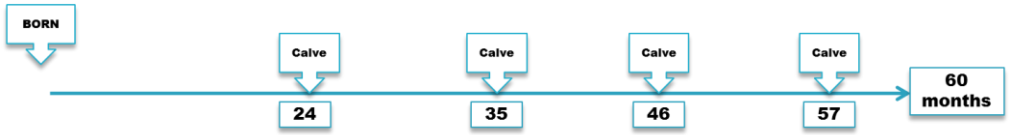
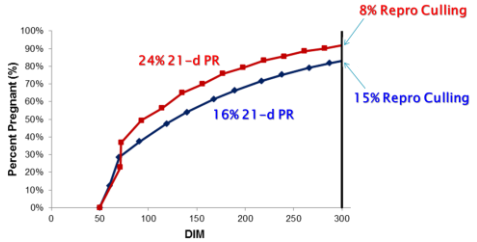
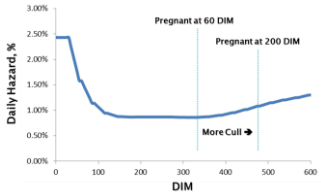
Better Repro ➔ More Profit

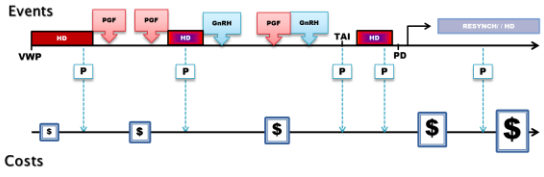
- ↗ Milk
- ↗ Calves
- ↙ Repro culling
- ↙ Involuntary culling
- ↙ Repro costs



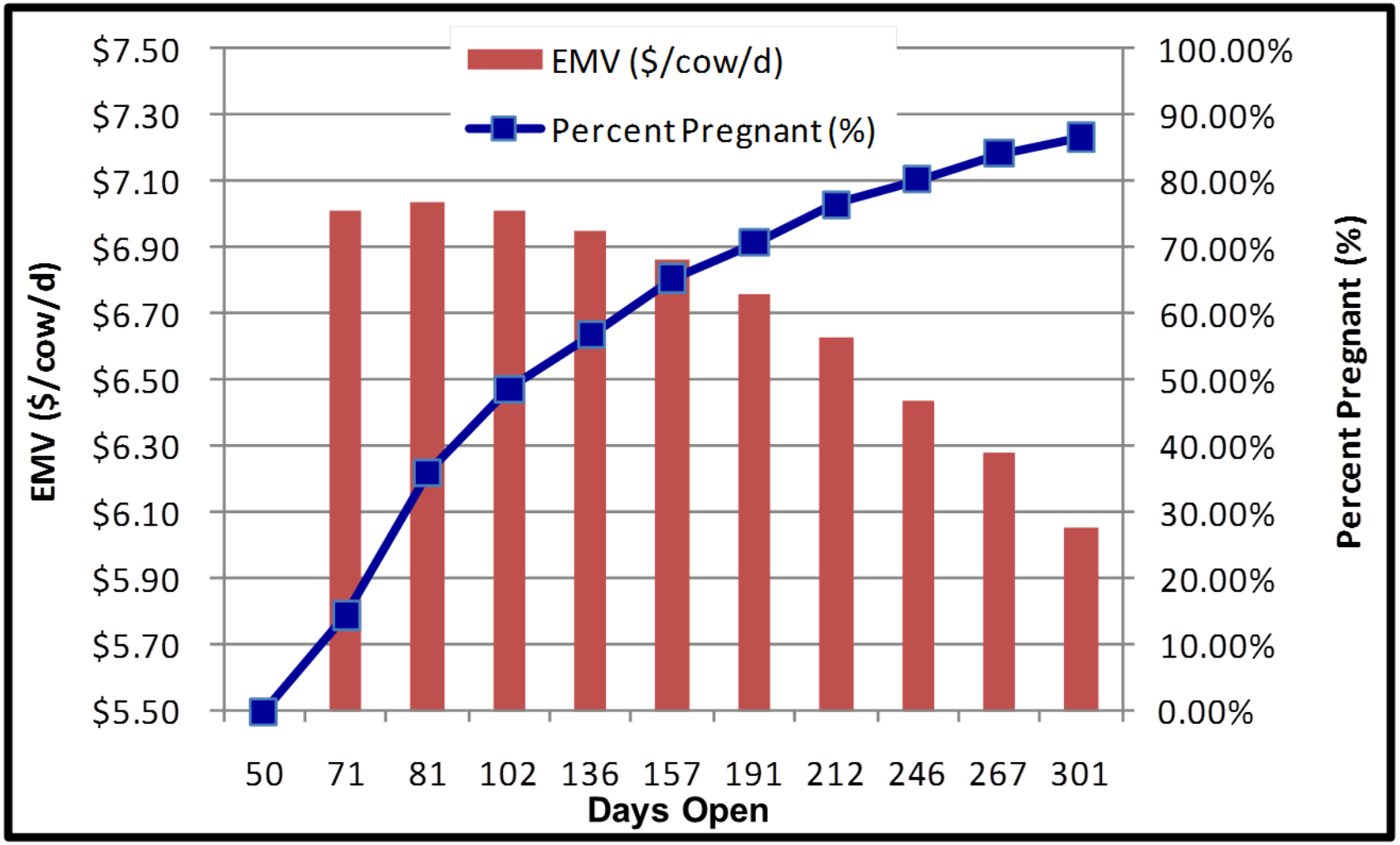








Expected Monetary Value & Repro



Do You Want to Analyze Your Farm?

THE UNIVERSITY of WISCONSIN MADISON

UW-Dairy Repro$

Victor E. Cabrera & Julio O. Giordano

Department of Dairy Science

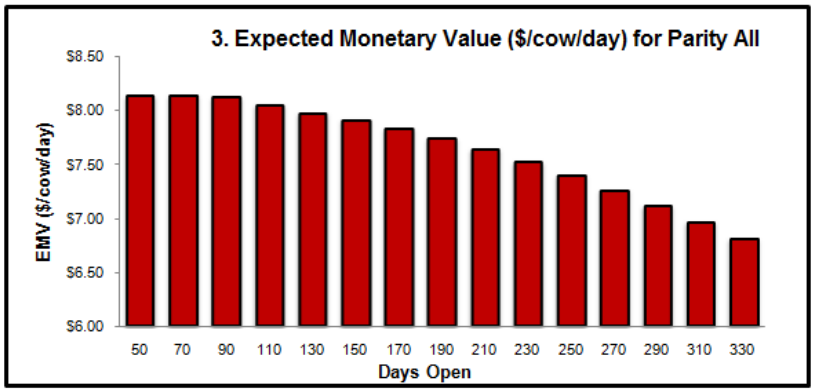
UW Extension University of Wisconsin–Extension

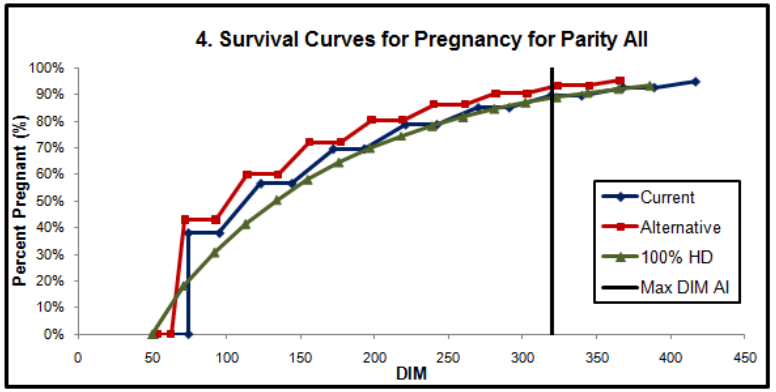
1. Productive and Economic Parameters Summary

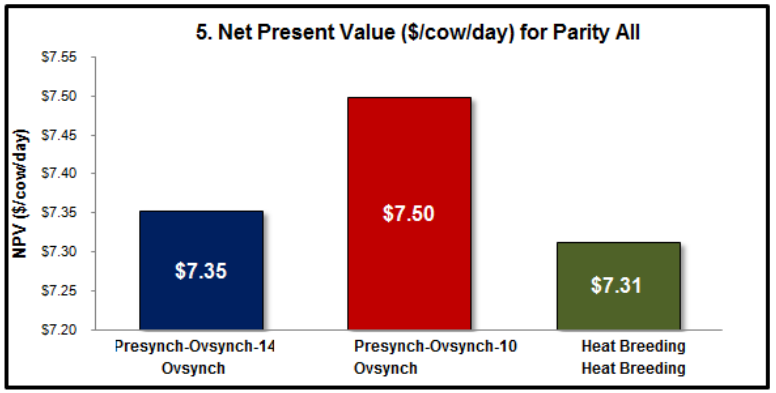
Lacating Cows in Parity All	(#)	1000
Rolling Herd Average (RHA)	(lb/cow/y)	28000
Milk Price	($/cwt)	14.50
Average Value New Born	($)	90
Heifer Replacement Value	($)	1,000
Salvage Value	($)	700

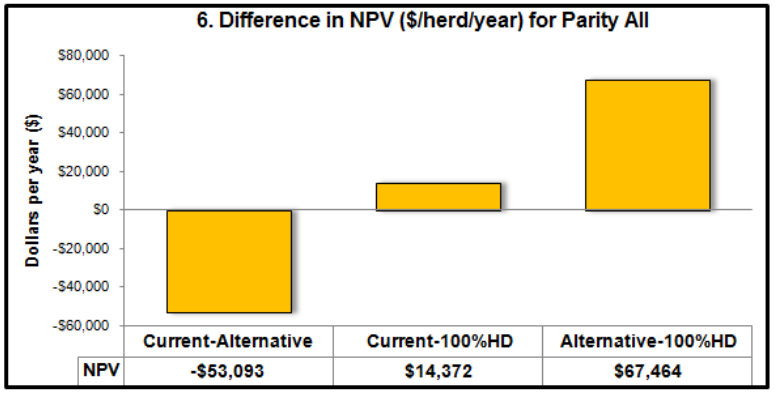
2. Reproductive Programs Summary

	Current	Alternative	Baseline
1st Service Postpartum	Presynch-Ovsynch-14	Presynch-Ovsynch-10	Heat Breeding
2nd and Following Services	Ovsynch	Ovsynch	Heat Breeding
Voluntary Waiting Period	53d	53d	50d
Maximum DIM for Breeding		320d	
DIM 1st TAI	74d	72d	
Interbreeding Interval	49d	42d	21d
Heat Bred Before 1st TAI	0%	0%	55%
CR Heat Bred Before 1st TAI	0%	0%	33%
Heat Bred After 1st TAI	0%	0%	55%
CR Heat Bred After 1st TAI	0%	0%	28%
CR 1st Service TAI	38%	43%	
CR 2nd+ Services TAI	30%	30%	
Cost 1st Service Breeding	$34.00	$33.89	
Cost Resynch Breedings	$27.33	$29.33	
Cost Heat Breedings	$16.61	$18.16	$17.00
Pregnancy Diagnosis Method	Palpation	Ultrasound	Palpation
Pregnancy Diagnosis Cost	$6.56	$8.16	$7.00









Customize Your Farm

1. Productive Parameters		
Lactating Cows	(#)	960
Rolling Herd Average (RHA)	(lb/cow/y)	29000
Involuntary Culling Rate	(%/y)	14.3%
Mortality Rate	(%/y)	8.00%
Stillbirth Rate	(%)	9.4%

2. Lactation Curves		Lact. 1	Lact. 2	Lact. > 2
Cow Number		363	244	353
Body Weight (lb/cow)		1,350	1,400	1,450
Test	DIM ☑	Define Lactation Curves Below		
1	15	77	105	107
2	45	91	120	126
3	75	94	120	128
4	105	94	116	125
5	135	93	112	120
6	165	91	107	112
7	195	89	98	104
8	225	87	91	94
9	255	83	82	86
10	285	79	75	81
11	315	76	68	71
12	345	72	61	61
13	375	70	57	60
14	405	60	53	55
17	495	56	45	40
18	525	57	45	55
19	555	54	29	27

Customize Your Farm

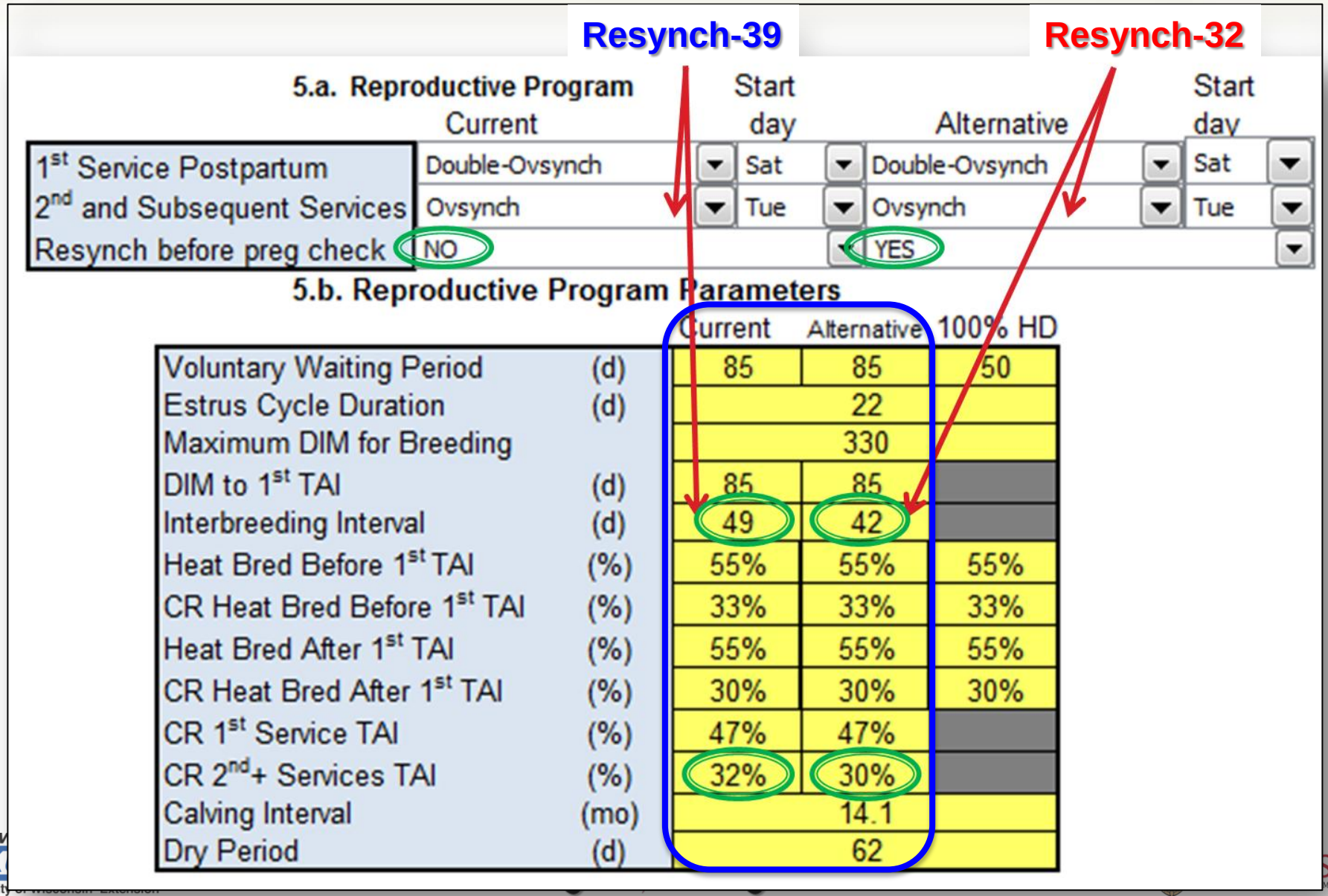
3. Economic Parameters ☐ Check if total breeding costs are known

Milk Price	($/cwt)	16.00
Cost Feed Lactating (DM)	($/lb)	0.10
Dry Period Fixed Cost	($/d)	2.20
Female Calf Value	($/calf)	300
Male Calf value	($/calf)	75
Heifer Replacement Value	($/heifer)	1,600
Salvage Value	($/cow)	780
Labor Cost for Injection	($/hr)	15.00
Heat Detection Cost	($/hr)	15.00
Artificial Insemination Cost	($/cow)	17.00
Interest Rate	(%/y)	6.5%

4. Pregnancy Diagnosis Cost

		Current	Alternative	100% HD
Palpation	($/hr)	90		90
Ultrasound	($/hr)		90	
Blood Test	($/cow)			

Customize Your Farm



Customize Your Farm

5.c. Hormones Cost

Hormone	Brand	Vial Cost	Doses Vial
GnRH	Fertagyl	19	10
PGF	Lutalyse	40	20
CIDR			
hCG	Chorulon	17.4	5

Resynch-39

5.d. Injections and Pregnancy Diagnosis Labor Cost: *Current Program*

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
Inject.	Laborers		3		1		2	
	hr/d		3.5		1.5		1	
	Cows Treated		165		45		20	
Preg.	# Cows		45		0		0	
Diag.	hr/d		2.75		0		0	

Resynch-32

5.e. Injections and Pregnancy Diagnosis Labor Cost: *Alternative Program*

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
Inject.	Laborers		3		1		2	
	hr/d		3.75		1.5		1	
	Cows Treated		195		40		20	
Preg.	# Cows		40		0		0	
Diag.	hr/d		2.75		0		0	

5.f. Heat Detection Labor Cost

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
Heat	Laborers	1	1	1	1	1	1	1
Detect.	hr/d	3	3	3	3	3	3	3
Preg.	# Cows	30	0	0	0	0	0	0
Diag.	hr/d	2	0	0	0	0	0	0

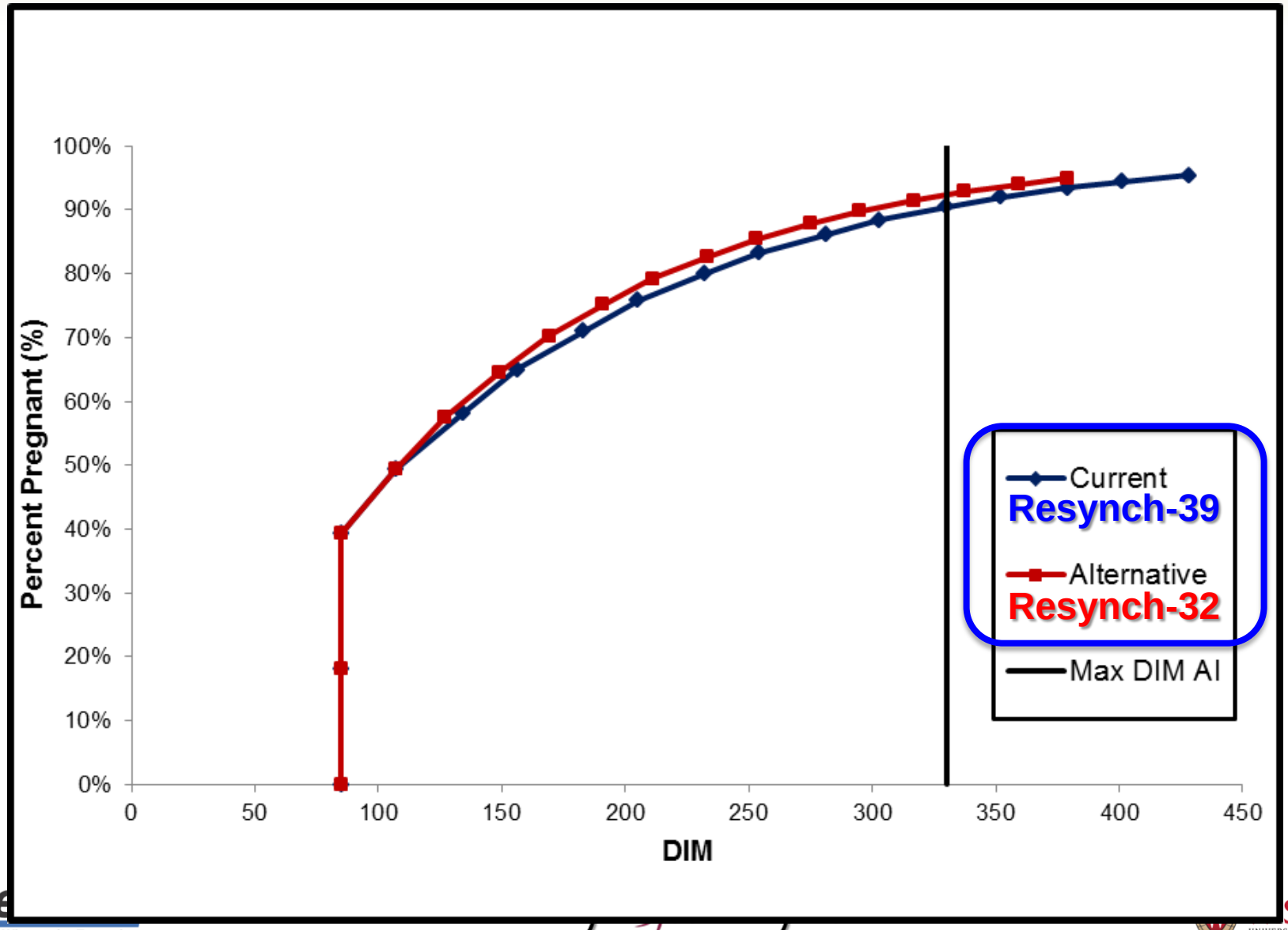
Your Repro Costs

2. Reproductive Programs Summary

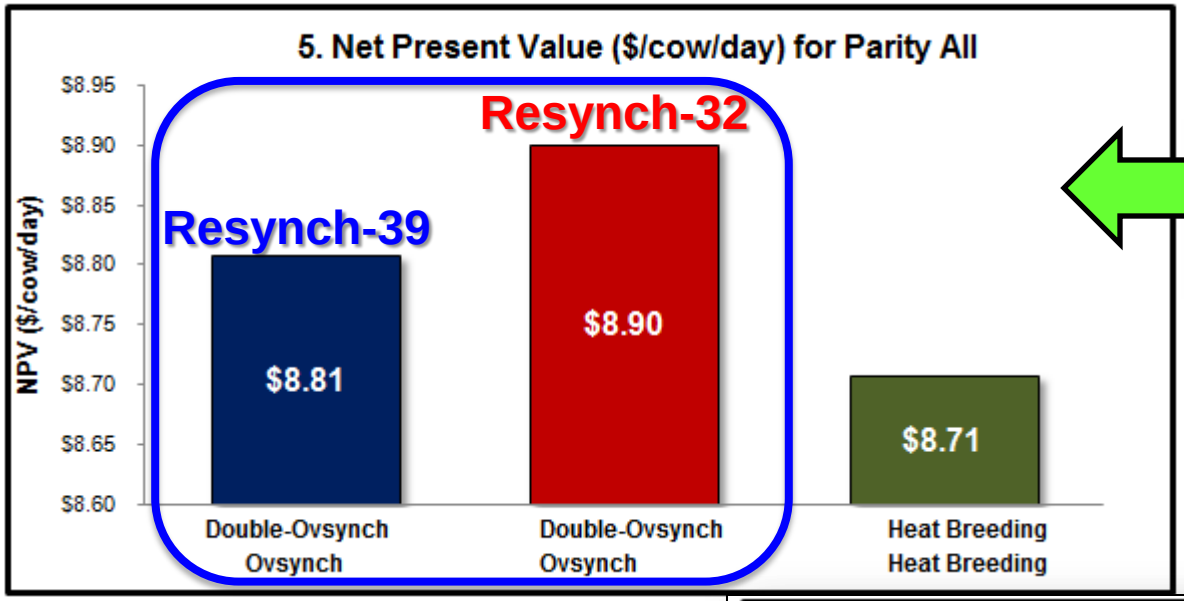
	Current	Alternative	Baseline
1st Service Postpartum	Double-Ovsynch	Double-Ovsynch	Heat Breeding
2nd and Following Services	Ovsynch	Ovsynch	Heat Breeding
Cost 1st Service Breeding	$40.46	$40.95	
Cost Resynch Breedings	$30.71	$31.28	
Cost Heat Breedings	$22.56	$23.19	$23.00
Pregnancy Diagnosis Method	Palpation	Ultrasound	Palpation
Pregnancy Diagnosis Cost	$5.50	$6.19	$6.00

Resynch-39 **Resynch-32**

Your Repro Performance

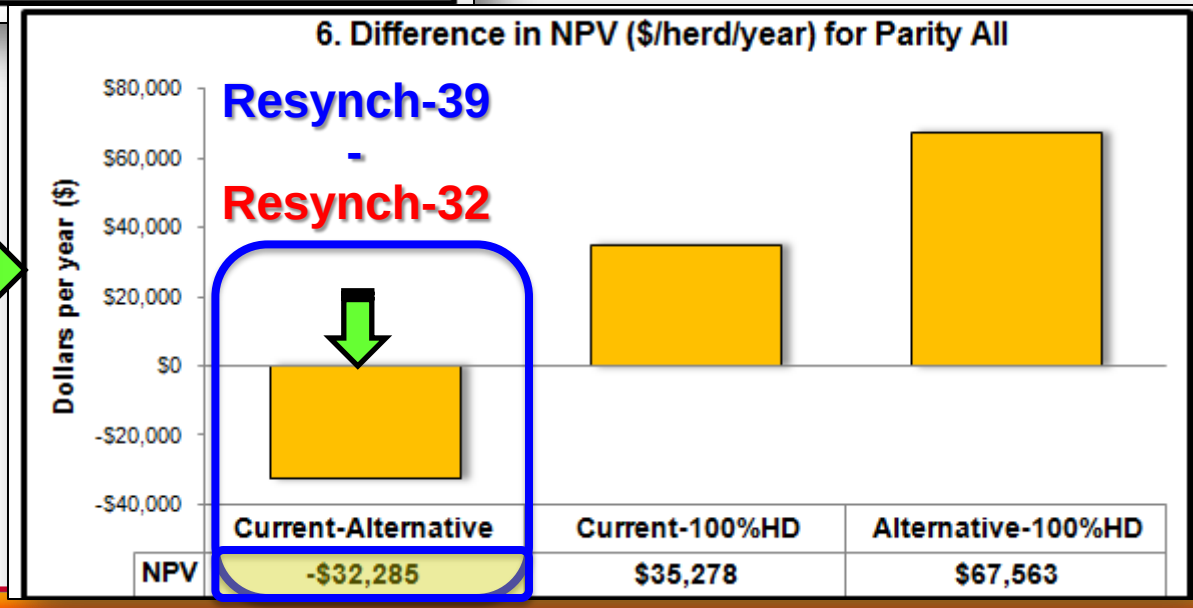


Your Economic Performance



Per Cow per Day

Per Herd per Year



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Questions?

REPRO MONEY

Repro Money is a **team based farmer directed program** to improve the reproductive performance of his herd.

- **Farm specific**: Farms enroll and commit to form a reproductive team
- **Who is in the team? :**Farm owner, veterinarian, extension agent, AI technician and others
- **Results oriented**: 4 meetings over 6 months.
  - Define clear goals
  - Create a focused reproductive action plan
  - Put it in place
  - Evaluate results at 4th meeting

For more information: **http://fyi.uwex.edu/repromoney/**
email us at: **repromoney@ces.uwex.edu**
Telephone: **608-265-9746**
Or contact your local county agent

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