30 – 30

4 Keys to Achieving a 30% 21-Day Pregnancy Rate in a 30,000 lb. Dairy Herd

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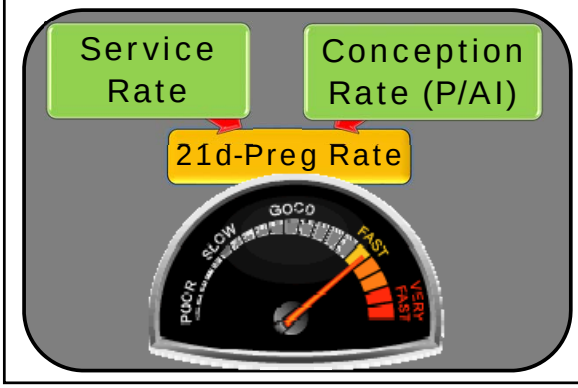
University of Wisconsin-Madison

21-Day Pregnancy Rate

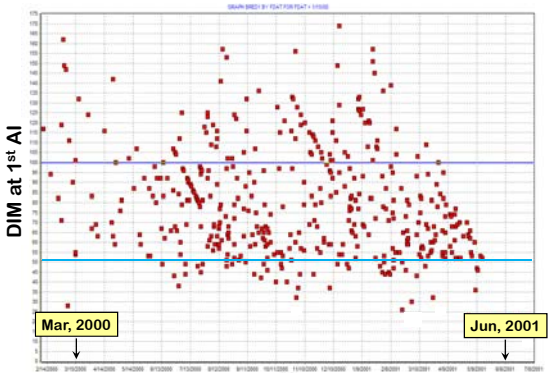


4 Keys to a 30% Pregnancy Rate

Key 1:

Aggressively inseminate cows at the end of the voluntary waiting period

Distribution of DIM at 1st AI



Reproductive Management of Lactating Dairy Cows Using Synchronization of Ovulation

1997 J Dairy Sci 80:301–306

J. R. PURSLEY, MICHAEL R. KOSOROK,[1] and MILO C. WILTBANK[2]
Department of Dairy Science, University of Wisconsin, Madison 53706

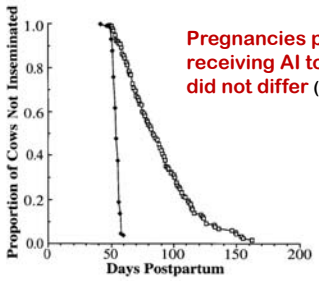


Figure 1. Survival curves for days to first AI in lactating Holstein cows managed with standard reproductive strategies (○) versus timed AI after synchronization of ovulation (●).

Pregnancies per AI between cows receiving AI to estrus vs. Timed AI did not differ (39% vs. 37%)

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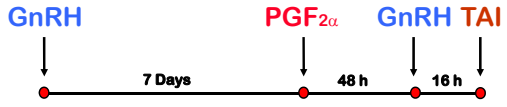
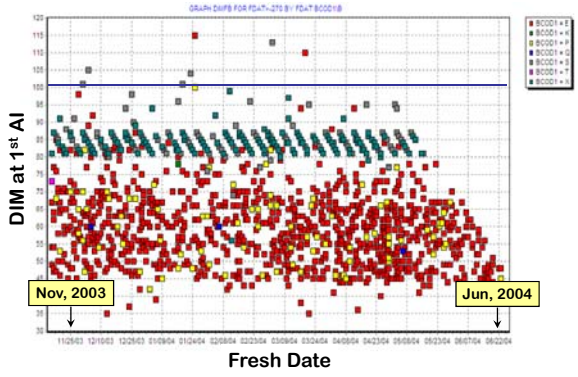
Ovsynch

Pursley, Mee, & Wiltbank, 1995
Theriogenology 44:915



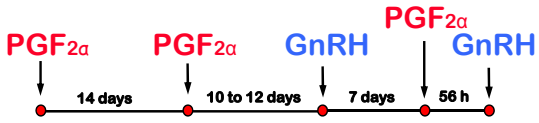
"Back Door" Ovsynch



J. Dairy Sci. 84:1646–1659

Effects of Presynchronization and Bovine Somatotropin on Pregnancy Rates to a Timed Artificial Insemination Protocol in Lactating Dairy Cows

F. Moreira,* C. Orlandi,* C. A. Risco,† R. Mattos,*
F. Lopes,* and W. W. Thatcher*
*Department of Dairy and Poultry Sciences,
University of Florida, Gainesville, 32611
†Large Animal Clinical Sciences,
University of Florida, Gainesville, 32610

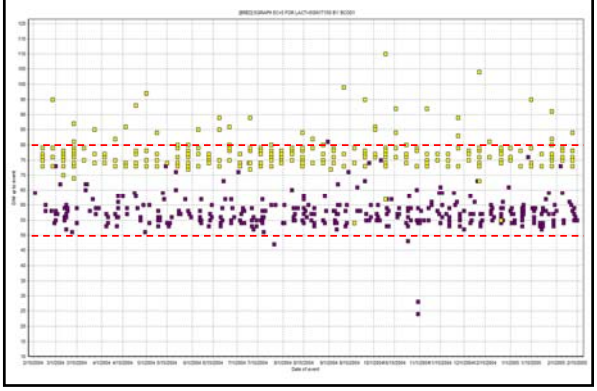


Presynch-Ovsynch 14/11

Galvao et al., 2007; J. Dairy Sci. 90:4212–4218

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				PGF →		
				PGF →		
	GnRH					
	PGF		GnRH	TAI		

Presynch-Ovsynch + Detection of Estrus



Summary of responses by 103 herd managers

Caraviello et al., 2006; J. Dairy Sci. 89:4723

- Do you use estrous synchronization and/or timed AI?
  - Yes (n = 90)
  - No (n = 13)
- For what do you use estrous synchronization or TAI?
  - Setting up cows for first service (n = 77)
  - Resynchronizing cows for 2nd and greater service (n = 69)
  - Breeding cows with ovarian cysts (n = 53)
  - Synchronizing embryo transfer recipients (n = 10)

U.S. cows by herd synchronization (%)

Norman et al., 2009; J. Dairy Sci. 92:3517-3528.

Year	Not synchronized	Possibly synchronized	Probably synchronized	Synchronized
1998	91	5	4	<1
1999	85	7	7	<1
2000	80	8	12	<1
2001	75	9	14	1
2002	70	10	19	1
2003	65	9	24	2
2004	58	10	28	4
2005	52	9	33	5
2006	47	9	36	8
2007	45	9	37	8
2008	42	9	39	11

U.S. Holstein synchronization and reproduction*

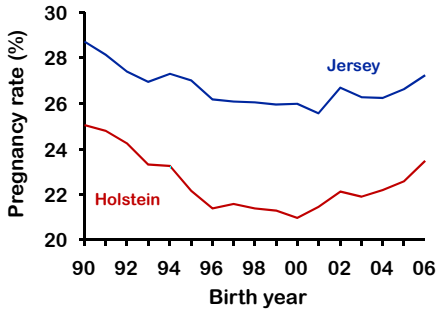
Norman et al., 2009; J. Dairy Sci. 92:3517-3528.

Sync status	Days to First breeding	Conception rate (%)	Services (no.)	Calving interval (days)
Not synchronized	88	31	2.4	419
Possibly synchronized	79	29	2.6	413
Probably synchronized	75	29	2.6	412
Synchronized	77	30	2.6	414

*2008 breedings

U.S. pregnancy rates

Norman et al., 2009; J. Dairy Sci. 92:3517-3528.

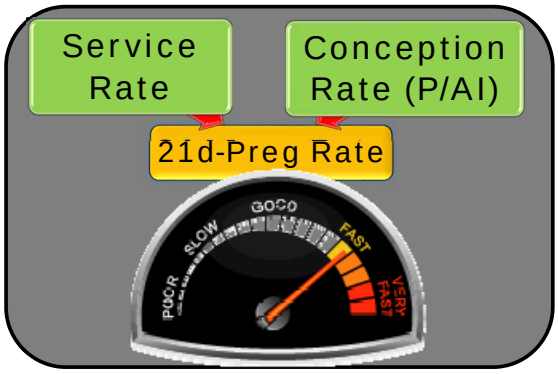


4 Keys to a 30% Pregnancy Rate

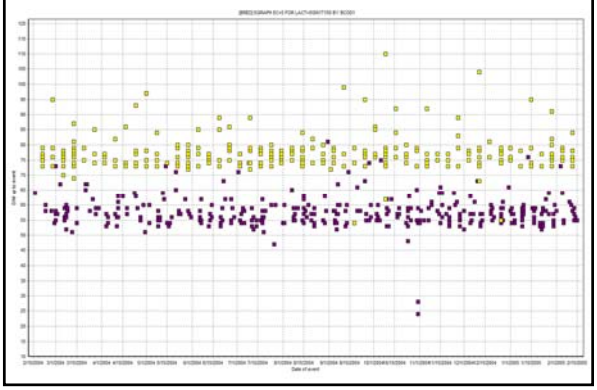
Key 2:

Increase fertility to first AI

21-Day Pregnancy Rate

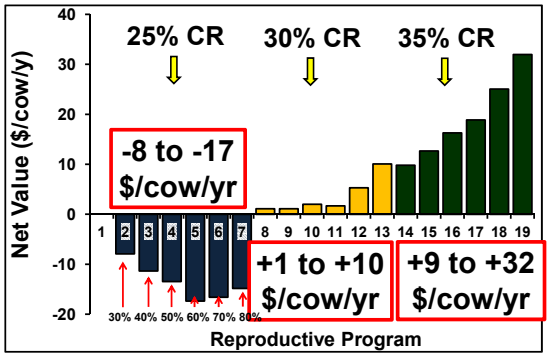


Presynch-Ovsynch + Detection of Estrus



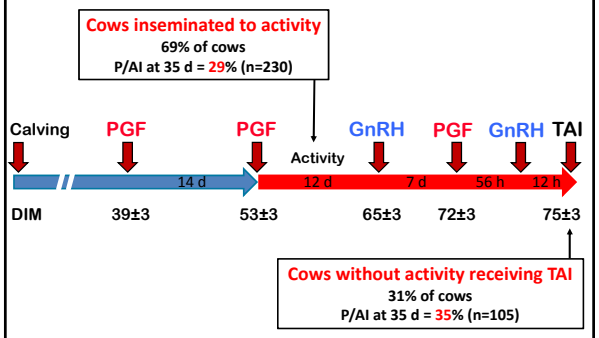
Compared to 100% TAI

Giordano et al., 2012; J. Dairy Sci. 95:5442-5460



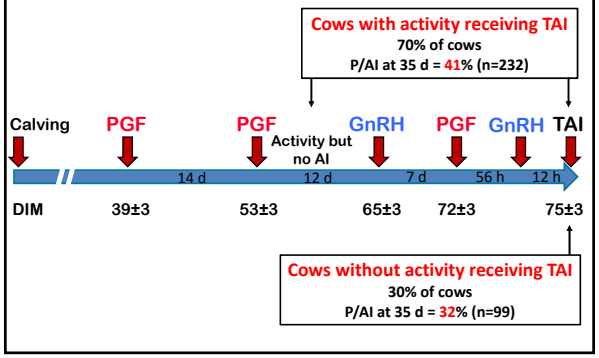
Presynch Ovsynch with AI to activity

Fricke et al., 2014; J. Dairy Sci. 97:2771-2781

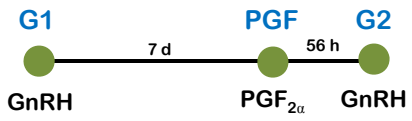


Presynch Ovsynch with 100% TAI

Fricke et al., 2014; J. Dairy Sci. 97:2771-2781

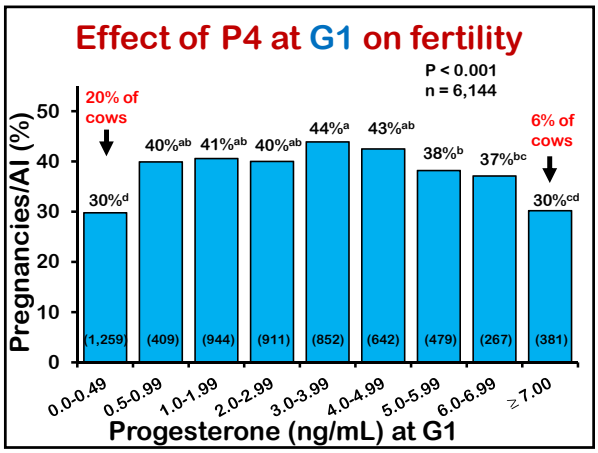


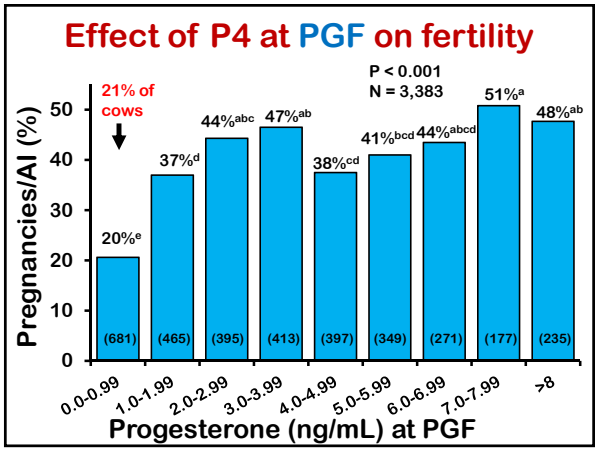
Key points during the Ovsynch Protocol



Question:

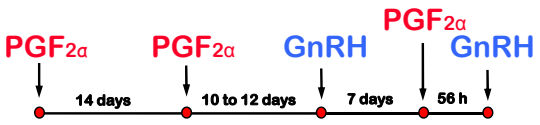
How does progesterone concentration during the Ovsynch protocol affect fertility?





Presynch/Ovsynch Limitations

1) Anovular cows are not affected
2) Cows are not tightly presynchronized



J. Dairy Sci. 92:5739–5753
doi:10.3168/jds.2009-2226

Genetic parameters for anovulation and pregnancy loss in dairy cattle

R. L. Bamber,*[1] G. E. Shook,*[2] M. C. Wiltbank,* J. E. P. Santos,† and P. M. Fricke*
*Dairy Science Department, University of Wisconsin, Madison 53706
†Department of Animal Sciences, University of Florida, Gainesville 32611-0910

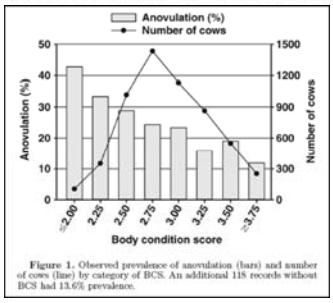


Figure 1. Observed prevalence of anovulation (bars) and number of cows (line) by category of BCS. An additional 118 records without BCS had 13.6% prevalence.

5,818 records from
13 studies in 8 herds
prevalence = 23.3%

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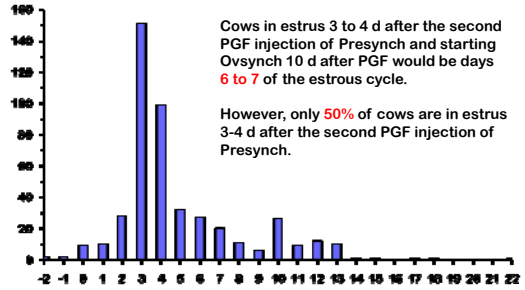
Frequency of AI Relative to the Second PGF Injection of Presynch



Cows in estrus 3 to 4 d after the second PGF injection of Presynch and starting Ovsynch 10 d after PGF would be days 6 to 7 of the estrous cycle.

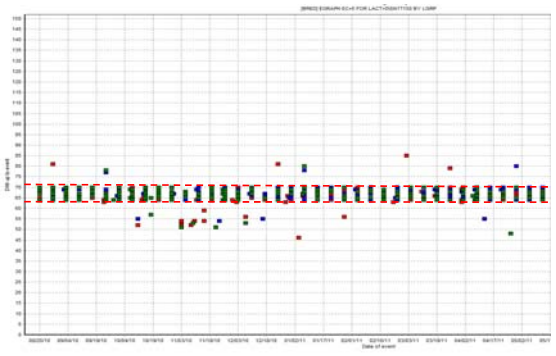
However, only 50% of cows are in estrus 3-4 d after the second PGF injection of Presynch.

Double Ovsynch

Souza et al., 2008; Theriogenology 70:208-215

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					GnRH	
					PGF	
	GnRH					
	GnRH					
	PGF		GnRH	TAI		

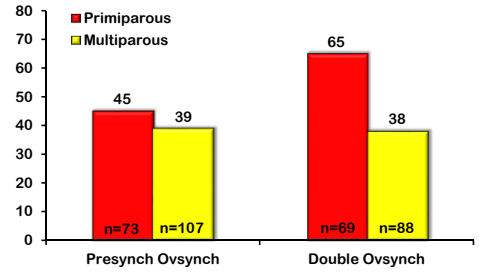
Double-Ovsynch for first timed AI



Effect of treatment on fertility 39 to 45 d after TAI

Souza et al., 2009; Theriogenology 70:208-215

Effect	P-value
Treatment	0.03
Parity	0.02

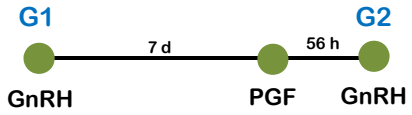


Breeding Method Comparison

Maria Jose Valenzuela - M.S. Thesis, 2014

Breeding Method	n	P/AI (%)
Estrus	407	37.3
Presynch-Ovsynch	1,399	42.0
Double-Ovsynch	797	49.4

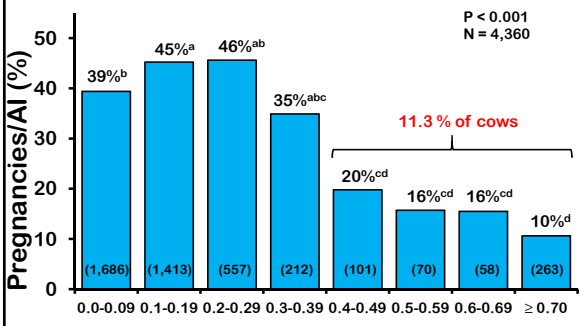
Key points during the Ovsynch Protocol



Question:

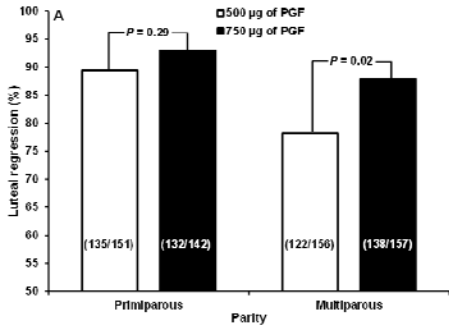
How does progesterone concentration during the Ovsynch protocol affect fertility?

Effect of P4 at G2 on fertility



Effect of cloprostenol dose on luteal regression

Giordano et al. 2013; Theriogenology 80:773-783



A second PGF treatment during Double Ovsynch

Brusveen et al., 2009; J. Dairy Sci. 92:1412-1422

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					GnRH	
					PGF	
	GnRH					
	GnRH					
	PGF	±PGF	GnRH	TAI		

Effect of second PGF treatment

Brusveen et al., 2009; J. Dairy Sci. 92:1412-1422

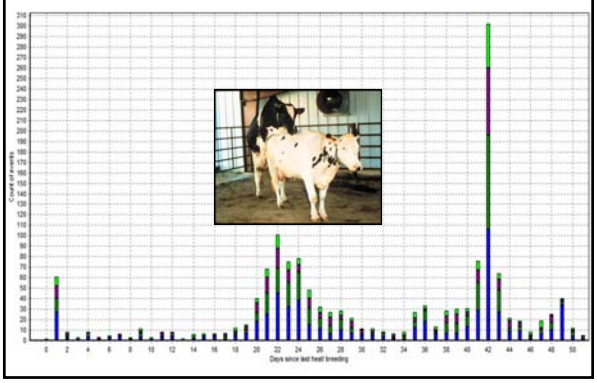
Treatment	First P/AI (%)	Low P4 (%)
1 x PGF	47 (109/232)	86 (179/208)
2 x PGF	53 (116/221)	98 (195/200)
P-value	0.24	<0.001

4 Keys to a 30% Pregnancy Rate

Key 3:

Identify nonpregnant cows and aggressively reinseminate them

Return to Estrus after AI



J. Dairy Sci. 86:3941–3950

Fertility of Dairy Cows after Resynchronization of Ovulation at Three Intervals Following First Timed Insemination

P. M. Fricke,* D. Z. Caraviello,* K. A. Weigel,* and M. L. Welle†
*Department of Dairy Science, University of Wisconsin, Madison 53706
†Miltrim Farms, Inc., Athens, Wisconsin 54411

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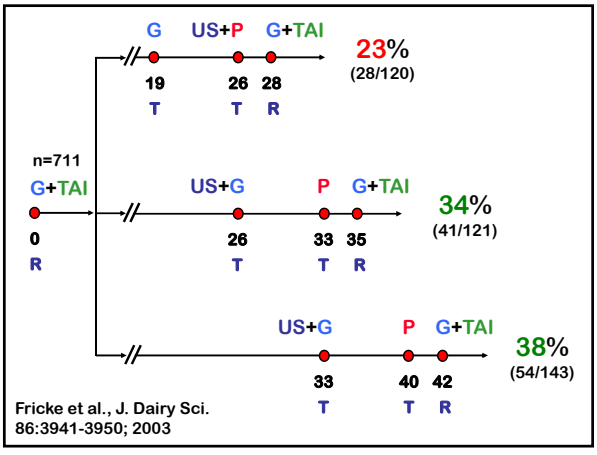
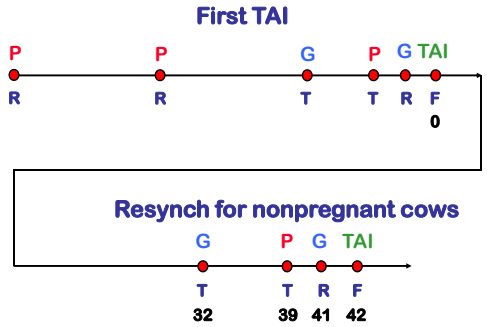


Fricke et al., J. Dairy Sci. 86:3941-3950; 2003

Synch and Resynch



Fertility to TAI by AI Number

Bred #	%Conc	#Preg	#Open	Other	Abort	%Tot
1	47	211	237	181	19	36
2	30	81	187	84	9	20
3	27	58	159	62	9	16
4	30	44	104	59	2	12
5	28	25	63	42	2	7
6	32	12	25	18	0	3
OTHERS	33	8	16	9	0	2
TOTALS	35	445	821	474	42	100

4 Keys to a 30% Pregnancy Rate

Key 4:

Increase fertility to 2nd and greater AI

Modifications to Ovsynch improve fertility during resynchronization: Evaluation of presynchronization with GnRH 6 d before Ovsynch and addition of a second PGF treatment

P.D. Carvalho, M.J. Fuenzalida, A. Ricci, M. Luchterhand, J. Mulcahy, R.V. Barletta, G.M. Baez, V.G. Santos, M.C. Amundson, J.N. Guenther, A.H. Souza, M.C. Wiltbank, and P.M. Fricke

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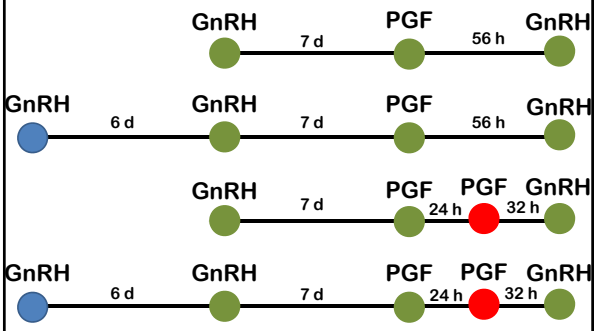
Treatments

Carvalho et al., 2014; J. Dairy Sci. 97(Suppl. 1):261

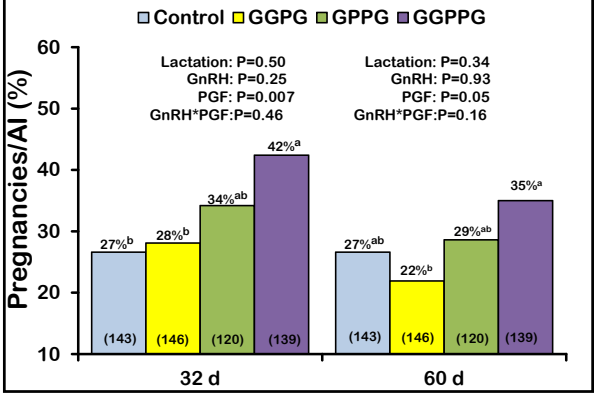


Resynch for 2nd and greater TAI

Carvalho et al., 2014; J. Dairy Sci. 97(Suppl. 1):261

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				TAI		
		±GnRH				
	GnRH					
	PGF	±PGF	GnRH	TAI		

Pregnancies/AI – Resynch



J. Dairy Sci. 96:1–11
http://dx.doi.org/10.3168/jds.2013-6960

Supplemental progesterone and timing of resynchronization on pregnancy outcomes in lactating dairy cows

T. R. Bilby,*1 R. G. S. Bruno,* K. J. Lager,* R. C. Chebel,† J. G. N. Moraes,† P. M. Fricke,‡ G. Lopes Jr.,‡ J. O. Giordano,‡ J. E. P. Santos,§ F. S. Lima,§ J. S. Stevenson,# and S. L. Pulley#
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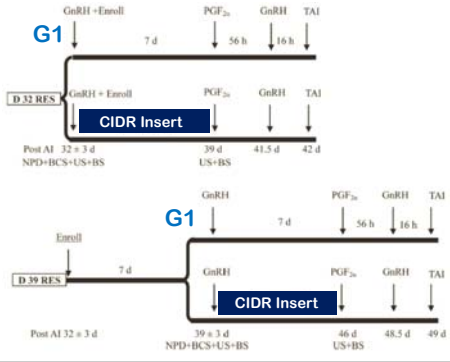
Experimental Design

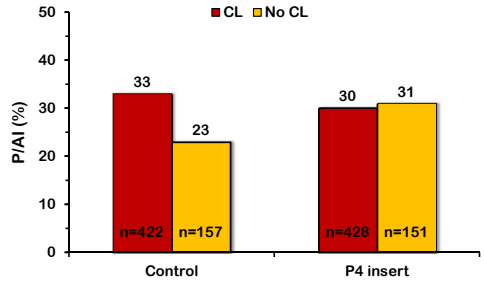
Bilby et al., 2013; J. Dairy Sci. 96:7032-7042



Effect of P4 insert and CL status at G1 on P/AI 32 d after TAI

Bilby et al., 2013; J. Dairy Sci. 96:7032-7042

Effect	P-value
P4 insert	0.65
CL status	0.15
Interaction	0.06



4 Keys to a 30% Pregnancy Rate

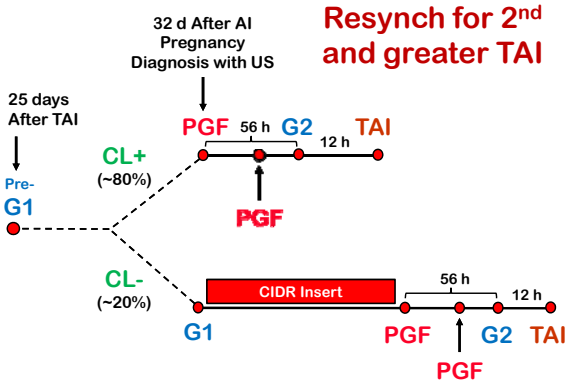
1. Aggressively inseminate cows at the end of the voluntary waiting period
2. Increase fertility to first AI
3. Identify nonpregnant cows and aggressively reinseminate them
4. Increase fertility to 2nd and greater AI

University of Wisconsin Emmons Blaine Dairy Cattle Research Center

Double Ovsynch for First TAI

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					GnRH	
					PGF	
	GnRH					
	GnRH					
	PGF	PGF	GnRH	TAI		

Resynch for 2nd and greater TAI



SUM ME305 MILK BY LACT

By LACT	Pct	Count	AvME305
1	28	153	28187
2	35	190	32997
3	19	103	32651
4	11	58	30715
5	5	30	29637
6	2	13	28308
7	0	2	34530
8	0	1	31330
Total	100	550	31062

By LACT	Pct	Count	Av MILK
1	28	153	74
2	35	190	102
3	19	103	106
4	11	58	104
5	5	30	104
6	2	13	94
7	0	2	131
8	0	1	89
Total	100	550	95

BREDSUM By Times Bred

May 6 to September 30, 2014

Bred Number	95% CI	%Conc	#Preg	#Open	Other	Abort	Total	%Tot	SPC
1	53-61	57	305	227	6	27	538	49	1.7
2	35-48	41	100	141	5	14	246	23	2.4
3	31-46	38	55	89	2	4	146	13	2.6
4	24-44	33	27	55	1	2	83	8	3.0
5	37-64	51	25	24	1	1	50	5	2.0
6	-	61	11	7	1	2	19	2	1.6
7	-	57	4	3	0	0	7	1	1.8
TOTALS	46-52	49	527	546	16	50	1089	100	2.0

21-Day Pregnancy Risk

May 6 to September 30, 2014

Date	Br Elig	Bred	Pct		Pg Elig	Preg	Pct	Aborts
5/06/14	75	53	71		71	24	34	2
5/27/14	66	46	70		64	18	28	2
6/17/14	78	55	71		78	28	36	4
7/08/14	67	44	66		66	14	21	3
7/29/14	67	44	66		67	20	30	3
8/19/14	64	45	70		64	22	34	1
9/09/14	70	50	71	*	55	18	33	1
9/30/14	71	60	85		0	0	0	0
Total	487	337	69		465	144	31	16

Wait Period 76