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# Dairy Reproductive Programs with NO Heat Detection

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## Introduction

Dairymen and veterinarians recognize the importance of a successful reproductive program. On most dairies a great deal of time, management effort, and veterinary focus is expended getting cows pregnant. The tasks include reproductive disease treatments, hormone injections, heat detection, insemination, and pregnancy exams. Of these tasks, excellent heat detection remains the key for success in most reproductive programs.

On average, dairies in the Upper Midwest find only 35-40% of the cows eligible to come into heat. Dairies with excellent heat detection can achieve 65-70% on a regular basis. Properly done, heat detection efforts can be very time consuming. Often this additional time is either not taken or simply is not available.

Another hurdle to achieving successful heat detection is its dependence on the skills of the observer. This makes the task more difficult when hired labor is utilized and less repeatable if a key individual leaves. In addition, on many dairies there is very little training of new personnel to properly detect heats. If heat detection could be eliminated as a skilled task, there is potential for a greater degree of organization of reproductive tasks and labor.

This paper will outline an approach that eliminates all heat detection efforts. This approach is based on the OvSynch® program, with a slight modification. Example reports will be shown from a 1,000 cow herd on the program for over a year.

## Outline of Program

The essentials of the original OvSynch® program are:

Start	GnRH
7 days	Prostaglandin
2 days	GnRH
1 day	Timed insemination at 16 hours post GnRH

Note there is no heat detection included in this scheme. The minimization of labor by eliminating heat detection was an important part of the original concept. However, since heat detection has been so heavily stressed, it was too great a leap for most dairy producers (and their veterinarians) to abandon all heat detection. Therefore, OvSynch® became viewed as a supplement or a “safety net” to inseminate those cows that management had not been able to find in heat in the traditional ways. Consequently, the OvSynch® program has usually been used either as a last resort on cows not found in heat or only on the initial cycle past the voluntary wait period.

We have modified the original program to require labor only two days a week. Wiltbank has shown comparable conception rates when the second GnRH was given at the timed insemination. Also with this implementation, absolutely no heat detection is performed at any time and no inseminations are done at times other scheduled. All cows are enrolled at the start of the voluntary wait period and dropped only when pregnant or marked as “Do Not Breed”.

Essentials of the program:

Start	GnRH
7 days	Prostaglandin
2 days	GnRH plus insemination

Forty day pregnancy exams are scheduled on the same day as the prostaglandin injections. Additionally, every cow receives an injection of GnRH 7 days prior to pregnancy exam (i.e, the cows inseminated 33 days ago). This allows every open cow to receive an injection of prostaglandin and be re-inseminated two days later as she has already been started on the OvSynch® protocol the previous week.

For example, if the workdays are Mondays and Wednesdays, these are Monday tasks:

First GnRH  
Prostaglandin  
Day 33 GnRH  
Pregnancy exams at 40 days (prostaglandin to all cows found open)

Wednesday tasks include:

Second GnRH  
Insemination

An outline of the schedule is shown at the end of this article.

Spreadsheet analysis was performed to estimate the achievable pregnancy rates with this program. In order to predict the pregnancy rate, an estimate of the conception rate achievable with a total OvSynch® program was needed. Average conception in Minnesota is 35%. A reasonable assumption for a total OvSynch® program is a 30% conception rate. The resulting pregnancy rate would be 17 %.

A 17% pregnancy rate is higher than the current average of 14% in the state of Minnesota. However, in addition to simple reproductive performance, there are additional management and labor factors to consider. These include:

- Focuses all reproductive related tasks into two days per week.
- Allows the labor to focus tightly on those tasks on those days.
- Amount and type of labor required is quite predictable.
- Can cut labor by one-half or more.
- Cows, injections, semen, etc. known 2-3 days ahead.
- Labor can be freed for other uses on off days,

There are also several other advantages:

- All animals serviced within 7 days of end of VWP.
- All open animals smoothly re-inseminated 2 days after open exam.
- All cows (in theory) in controlled estrus stage.
- No questioning of estrus signs.
- Decreased estrus activity – calmer cows.
- All pregnancy exams are exactly 40 days post-breeding.
- Many early embryonic deaths already occurred.

## **Monitoring**

Monitoring of the results becomes simplified since both heat detection intensity and heat detection accuracy no longer are variable from day to day. When personnel are hired to work on the reproductive program, they no longer need to be exceptionally skilled or specially trained on accurately detecting the signs of estrus in the cow. They only need to be able to take the list and inject the correct cows.

The focus then can be placed on properly implementing the needed tasks (finding the cows, injecting properly, and excellent insemination techniques) and on biological factors affecting conception (energy balance, reproductive pathology, etc.). It also becomes much easier to detect when the program is not being implemented or shortcuts are taken.

Degree of adherence to the program can be determined by answers to these questions:

- Breedings occurring only one day per week?
- All services exactly 42 days apart?
- All cows serviced within 7 days of end of VWP?
- How many "exceptions"?

Success of the program can be quickly monitored also:

- Pregnancy palpation result (= Conception 40 days prior).
- Pregnancy rates – 21 day calendar & post-partum.

If the program is not successful but is being fully implemented, in most cases there will be an underlying conception problem. Some possible causes of poor conception are:

- Prefresh/postfresh nutrition and management
- Post-partum disease and/or body condition
- Drug storage and injection handling
- Insemination techniques
  - Semen placement
  - Semen thawing and handling
  - Semen quality
  - Original quality as purchased
  - Tank storage quality changes

There are disadvantages to this approach:

- Drug costs may be \$10-\$15 per service
- Semen costs may rise somewhat
- Days of tasks not easily changed
- Requires excellent tracking of animals
- Requires excellent weekly organization and on task days
- Lessens opportunity to observe pens for other reasons
- Heat detection causes cows to leave program
- Hard to ignore standing heats on off days
- Truly non-cycling animals still get serviced
- Must resist skipping injections

- Must resist relying on ovarian palpation
- Must expect only 30-40% pregnant at check
- 2-3 month transition from old program

### Summary

Reproductive programs have traditionally been very dependent on both the quality and intensity of heat detection. However, heat detection is time intensive, must be performed daily, and requires some skill. Eliminating heat detection via a total OvSynch® program potentially has much benefit for better organization of labor and more reliable delivery of reproductive results. In order for this program to succeed, the dairy must be highly organized and committed to making the program work. In most cases, the cost of hormones is approximately the same as the labor savings.

### Example Herd Reports

These reports are from a 1,000 cow herd on total OvSynch® since January 2000.

#### Example 1

Date	Ht Elig	Heat	Pct	Pg Elig	Preg	Pct
2/16/00	273	111	40	265	46	17
3/ 8/00	249	137	55	239	45	18
3/29/00	246	133	54	240	30	12
4/19/00	263	143	54	260	52	20
5/10/00	264	152	57	261	35	13
5/31/00	287	145	50	284	39	13
6/21/00	301	159	52	296	37	12
7/12/00	317	162	51	310	31	10
8/ 2/00	328	198	60	324	47	14
8/23/00	322	163	50	319	47	14
9/13/00	324	198	61	321	53	16
10/ 4/00	297	159	53	294	49	16
10/25/00	292	177	60	290	44	15
11/15/00	287	147	51	284	40	14
12/ 6/00	290	180	62	284	56	19
12/27/00	282	155	54	279	53	18
<b>Total</b>	<b>4622</b>	<b>2519</b>	<b>54</b>	<b>4550</b>	<b>704</b>	<b>15</b>

The above report is the pregnancy rate over the year. Each line is a 21 day interval. An overall rate of 15% is above the state average of 14%. Prior to the initiation of the program, the pregnancy rate was 10%-12%. Long-term, the goal to achieve a pregnancy rate of 16-18% by improving conception rates from about 30% to 35%+.

Example 2

DIM	Ht Elig	Heat	Pct	Pg Elig	Preg	Pct
50	871	774	88	852	246	28
71	553	27	4	551	3	0
92	501	415	82	491	109	22
113	355	46	12	353	14	3
134	316	245	77	313	67	21
155	221	43	19	219	11	5
176	184	140	76	184	40	21
197	130	25	19	129	7	5
218	110	80	72	110	24	21
239	73	17	23	72	5	6
260	53	31	58	53	8	15
281	31	4	12	31	0	0
302	21	16	76	20	4	20
323	12	1	8	12	1	8
344	7	4	57	7	1	14
365	2	0	0	2	0	0
Total	3440	1868	54	3399	540	15

The above report is the pregnancy rate by 21 day intervals post-partum. Note how the rate alternates by odd/even cycles.

Example 3

By Day of the Week from 1/24/00 through 11/26/00

Week Day	%Preg	#Preg	#Open	Other	Total	%Tot	SPC
Monday	26	4	11	1	16	0	3.8
Tuesday	40	2	3	0	5	0	2.5
Wednesday	28	661	1670	71	2402	99	3.5
Saturday	0	0	1	0	1	0	
Sunday	0	0	2	0	2	0	
TOTALS	28	667	1687	72	2426	100	3.5

The above report shows the days of the week that inseminations occurred for the period from late January through November. Ninety-nine percent of the inseminations occurred on Wednesdays. The other inseminations occurred during a week when heat detection was done last spring, but the management decided heat detection was not cost-effective.

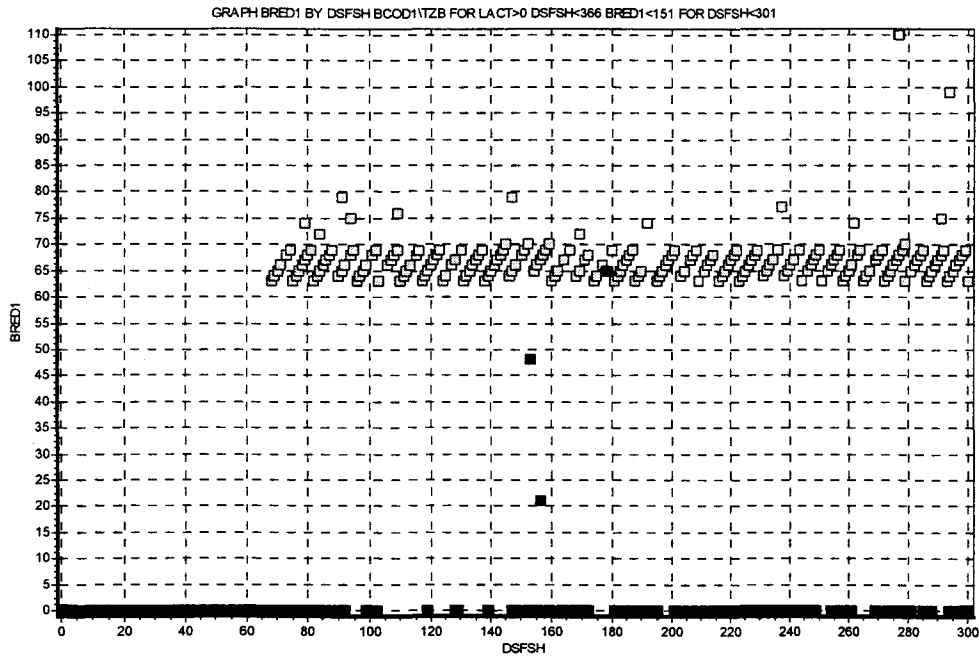
Example 4

By Day of the Week from 11/29/00 through 1/23/01

Week Day	%Preg	#Preg	#Open	Other	Total	%Tot	SPC
Thursday	33	147	292	12	451	99	3.0
Friday	0	0	1	0	1	0	
TOTALS	33	147	293	12	452	100	3.0

At the end of November, the weekdays for the tasks were changed to Tuesdays and Thursdays. Also, a ration problem was fixed at that time. Conception rate has risen in this period to 33%.

### Example 5



This graph shows the days in milk when the first inseminations occurred. This graph shows excellent implementation of the program after the voluntary wait period. Notice nearly all inseminations occur between 63 and 69 days in milk.

### Flow Diagram for Tasks

#### No Heat Detection, Inseminate Same Day as GnRH

