HEAT DETECTION IS STILL IMPORTANT WHEN USING OVSYNCH PROGRAMS

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TAKE HOME MESSAGES

- Consistent and persistent timed insemination programs can improve reproductive efficiency.
- Reproductive parameters typically analyzed through DHIA records will not show improvement for at least one year after implementation of timed AI programs.
- PreSynch and CoSynch alone improved reproductive efficiency at the University of Illinois Dairy, but increase emphasis on improving heat detection is warranted.

Reproductive efficiency on dairy farms is dependent on cows being presented for breeding or service. Most farms rely on someone to provide artificial insemination (AI) for their cows. Some farms still use a bull for primary service, but most often, bulls are used to "clean up" any cows that did not conceive after several attempts at AI. Assuming that all cows are bred by AI on first service, the success of the breeding program will depend on the proportion of cows presented for service as soon as possible after the voluntary waiting period (VWP). Traditionally, heat detection has been the means by which cows are initially presented for AI service. You would have to follow each individual cow around for 24 hrs/day for 21-24 days to detect each and every heat. Even then, you could not expect to achieve 100% heat detection due to all the variables involved with expression of estrous. With the introduction of reproductive schemes that not only synchronize heats but also synchronize ovulation (OvSynch), we can achieve nearly 100% service rates within 21 days of the voluntary waiting period.

Beginning in September 2002, the University of Illinois Dairy implemented a timed breeding program. All fresh cows were started on a PreSynch/CoSynch program and any open cows were started on just the CoSynch program. The VWP was moved from 45 days to 60 days and the program was designed to have all fresh cows receive their first service between 61 and 67 days in milk (PreSynch/CoSynch). The program was also designed so that cows were only locked up twice a week, on Tuesdays and Thursdays (CoSynch). Cows not conceiving to the first service were re-bred on observed signs of heat within 18 days after the initial AI. Weekly herd checks were performed and first pregnancy check was done at day 33 post breeding. Cows found open by rectal palpation were restarted on the CoSynch program. Table 1 below outlines the breeding program we have followed for the past two years.

The success of the program can be seen in the Figures 1 and 2. Because many reproductive parameters have statistical momentum, typically there is a lag in time before improvements can be seen once a new management program is implemented. Historically, the average days to first

service (ADFS) hovered around 80 days prior to the program (Figure 1). Within a few months a decrease can be seen as more and more fresh cows became enrolled in the program. By November 2004, the ADFS was 66 days and this was consistent across all lactation groups. Initially, the average days open (ADO) decreased to a historical low of 135 days, but climbed significantly as many cows late in lactation became pregnant through the new reproductive program (Figure 1). Now in the second year of this breeding program, the ADO has dropped dramatically and is averaging 120 days for the whole herd.

The services per conception for pregnant cows and all cows can be seen in Figure 2. Historically, services per cow was never below 4 and often exceeded 4 services while services per pregnancy hovered around 2.5. Services per conception peaked at 5.5 for all cows and 3.3 for pregnant cows one year after the program was initiated. Concern was voiced regarding the amount of semen required to maintain the program. Much of the increase in units of semen used was required to catch cows up to the program. In year two, as the whole herd entered the program after calving, the services per conception began to fall. As of November 2004, services per cow is at a historic low of 3.4 and services per pregnancy is also historically low at 2.3 and falling.

The nine month 21-day pregnancy rate has also improved over the past two years. Table 2 shows the current 21-day pregnancy rate by days in milk at service as of November 2004. Almost all (94%) of first services are by CoSynch at 61-81 days in milk (DIM). At that first CoSynch service, 31 percent become pregnant. Heat detection is required to present cows for service at the second cycle (82-102 DIM). Only 19 percent of eligible cows are detected in estrous and only 3 percent of cows eligible for pregnancy during that time frame become pregnant. During the third cycle (103-123 DIM) after the VWP, 77 percent of cows are presented for service due to a second CoSynch program. Pregnancy rates for this cycle are 30 percent. The following cycle (124-144 DIM) requires heat detection for cows to be presented for service. Again, the service rate is only 33 percent and the subsequent pregnancy rate of eligible cows is only 7 percent.

Improvements in heat detection, especially 18-24 days after the CoSynch breedings would take this reproductive program to the next level. Traditionally, suggestions for improvements in heat detection have emphasized more frequent observations of cows. While this practice will, no doubt, increase the number of cows presented for service, all efforts at improving heat detection cannot be placed on more observations alone. Environment, nutrition, physiology as well as the human labor force all play a role in enhanced heat detection efficiency. Environmental factors that can reduce heat detection efficiency include slippery surfaces, time spent on concrete, time in holding pen, poor freestall design and use, over-crowding and subsequent lameness. Nutritional factors include energy balance, mineral status, feeding management that may lead to rumen acidosis and lameness. Animal factors may include socialization and grouping strategies, body condition, other diseases and physiologic problems. Fixing these problems will help the workforce at the dairy by allowing the cows to naturally express estrous behavior. Then, enhancements in heat detection efficiency rest on the labor force. Providing visible cow identification, use of heat detection aids (tail chalk, heat patches, pedometers, etc.), and making observations a routine chore can then be accomplished.

Table 1. PreSynch CoSynch program used at UI Dairy since September 2002.

Day in Milk	Hormone or Action	Days Pregnant	Day of Week
26-32	PreSynch PGF1		Thursday
40-46	Presynch PGF2		Thursday
52-58	GnRH1		Tuesday
59-65	PGF		Tuesday
61-67	CoSynch - GnRH2 and Timed AI	0	Thursday
80-90	Rebreed if showing signs of heat	18-24	
94-100	Rectal palpation If pregnant, recheck in 7 d If open, GnRH1	33	Tuesday
101-107	Rectal palpation If pregnant, recheck at 90 d If open, PGF	40	Tuesday
103-109	GnRH2 and TAI for open cows	0	Thursday
120-130	Rebreed if showing signs of heat	18-24	
	Repeat CoSynch one more time	If still open	

Table 2. 9-Month 21-day Pregnancy Rate Summary by Days in Milk.

DIM	Heats			Pregnancies		
	# Eligible	#Observed	%Observed	# Eligible	#Reported	PG Rate
19-39	6	6	100	0	0	
40-60	13	6	46	1	0	
61-81	185	173	94	137	43	31
82-102	125	24	19	90	3	3
103-123	110	85	77	84	25	30
124-144	75	25	33	55	4	7
145-165	63	44	70	48	11	23
166-186	44	15	34	38	4	11
187-207	37	22	59	27	6	22
208-228	29	11	38	18	3	17
229-249	21	11	52	14	3	21
250-270	14	7	50	9	0	
>271	26	10	38	9	3	33
Total	750	439	59	531	105	20

Figure 3. Average days to first service and average days open. Program started September 2002.

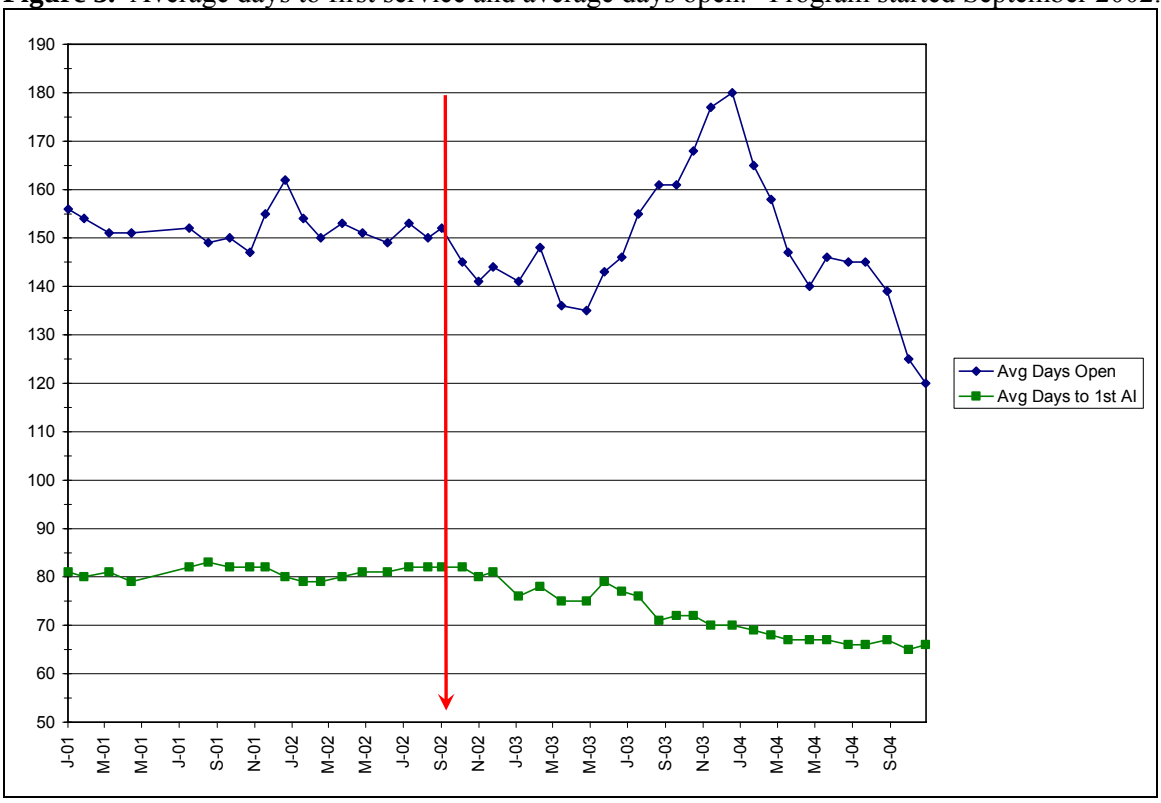

Figure 4. Services per conception for pregnant cows and all cows.