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Dairy Lines

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KANSAS DAIRY EXTENSION NEWS

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Upcoming Events

November 19–21, 1996
Becoming More Profitable in 1997 by Exploring Forward Pricing Commodities
November 19—Hutchinson, KS
November 20—Seneca, KS
November 21—Ottawa, KS

see insert for details

Costs of Programmed Breeding

by Jeff Stevenson and John F. Smith

Estimated average per cow cost for a first-service using nine programmed breeding systems

Program (A)	Drug cost[b] (B)	Palpation or milk P4 test[c] (C)	Injection labor[d] (D)	Total cost per cow[e] (E)
	$	$	$	$
1	6.00	0	1.00	7.00
2	7.05	0	1.17	8.22
3	4.50	0	0.75	5.25
4	3.00	0	0.50	3.50
5	3.29	10.27	1.70	15.26
6	3.15	13.62	1.13	17.90
7	10.67	0	1.83	12.50
8	9.00	0	1.00	10.00
9	15.00	0	1.50	16.50

[a]1 = A.I.-breeding at heat only after the second of two $PGF_{2\alpha}$ injections given 14 days apart.
2 = Target breeding program where A.I.-breeding at heat only after the second of two $PGF_{2\alpha}$ injections given 14 days apart and those cows not observed in estrus after the second $PGF_{2\alpha}$ injection are given a third injection and inseminated at heat or at 80 hours (in absence of detected heat) after the third injection.
3 = A.I.-breeding at heat after the first or second of two $PGF_{2\alpha}$ injections given 14 days apart.
4 = A.I.-breeding at heat during 6 days of heat detection or after one $PGF_{2\alpha}$ injection, given in the absence of detected heat on the sixth heat detection day.
5 = A.I.-breeding at heat occurs after weekly palpation.
6 = A.I.-breeding at heat occurs after weekly milk progesterone test.
7 = A.I.-breeding at heat occurs after weekly Monday injections of $PGF_{2\alpha}$
8 = A.I.-breeding at heat that follows $PGF_{2\alpha}$ (preceded one week earlier by GnRH).
9 = Ovsync: A.I.-breeding at 16 hours after GnRH, which was injected 48 hours after $PGF_{2\alpha}$ (preceded one week earlier by GnRH).
[b]Doses of $PGF_{2\alpha}$ = $300 and GnRH = $6.00
[c]Palpation = $3.00 and milk progesterone (P4) test = $6.00.
[d]Cow handling cost = $0.50.
[e]Total cost per cow (E) = B + C + D

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Heart of America Dairy Herd Improvement Summary (September)

	Quartiles				Your Herd
	1	2	3	4	
Aryshire					
Rolling Herd Average	17,314	14,353	13,351	11,282	
Summit Milk Yield 1st	63.1	53.0	51.3	45.7	
Summit Milk Yield 2nd	74.1	63.8	60.5	55.8	
Summit Milk Yield 3rd	82.8	71.3	67.2	60.5	
Summit Milk Yield Avg.	73.7	63.5	59.9	55.5	
Income/Feed Cost	1,229	1,017	932	759	
SCC 1st LACT	171	172	219	287	
SCC 2nd LACT	185	209	231	260	
SCC 3rd+ LACT	371	277	452	472	
SCC Average	255	230	320	380	
Days to 1st Service	92	85	92	80	
Days Open	127	130	131	137	
Projected Calving Interval	409	412	413	419	
Brown Swiss					
Rolling Herd Average	19,395	16,025	14,290	12,135	
Summit Milk Yield 1st	61.8	53.8	48.4	44.2	
Summit Milk Yield 2nd	78.6	68.9	61.7	55.3	
Summit Milk Yield 3rd	83.9	75.2	68.9	59.1	
Summit Milk Yield Avg.	74.8	67.0	60.7	53.6	
Income/Feed Cost	1,548	1,294	1,133	892	
SCC 1st LACT	234	196	163	217	
SCC 2nd LACT	305	203	195	215	
SCC 3rd+ LACT	395	463	384	475	
SCC Average	321	328	281	349	
Days to 1st Service	92	85	87	102	
Days Open	142	138	156	156	
Projected Calving Interval	422	425	444	444	
Holstein					
Rolling Herd Average	21,712	18,827	16,897	13,926	
Summit Milk Yield 1st	71.1	63.5	58.7	50.7	
Summit Milk Yield 2nd	90.6	80.2	73.1	61.9	
Summit Milk Yield 3rd	95.1	84.7	77.7	66.0	
Summit Milk Yield Avg.	84.5	75.5	69.8	60.3	
Income/Feed Cost	1,738	1,446	1,391	966	
SCC 1st LACT	251	277	272	316	
SCC 2nd LACT	277	309	321	396	
SCC 3rd+ LACT	455	471	500	599	
SCC Average	333	361	381	469	
Days to 1st Service	92	93	98	100	
Days Open	142	141	143	144	
Projected Calving Interval	422	421	423	423	
Jersey					
Rolling Herd Average	15,789	13,429	11,964	9,945	
Summit Milk Yield 1st	51.5	47.2	39.8	37.1	
Summit Milk Yield 2nd	62.9	55.9	47.9	43.2	
Summit Milk Yield 3rd	67.4	59.2	52.5	43.8	
Summit Milk Yield Avg.	60.9	54.7	47.9	41.7	
Income/Feed Cost	1,551	1,123	921	800	
SCC 1st LACT	214	296	224	334	
SCC 2nd LACT	172	358	225	437	
SCC 3rd+ LACT	350	531	380	538	
SCC Average	263	422	303	456	
Days to 1st Service	82	87	94	91	
Days Open	113	122	129	129	
Projected Calving Interval	392	399	407	408	

Continued from page 1

Programmed breeding systems provide an organized approach to administering first A.I. breedings to dairy cows. These programs are designed to maintain calving intervals of more optimal duration. What do they cost? Are they more cost-effective than traditional approaches of heat detection + A.I.-breeding?

A comparison was made in four herds between two different programs. Injections of $PGF_{2\alpha}$ were given to any cow on the first and subsequent Mondays after 50 days in milk until A.I. bred; the second program administered $PGF_{2\alpha}$ to cows only when with a CL was identified by rectal palpation on Monday morning. Weekly Monday inject $PGF_{2\alpha}$ resulted in earlier first inseminations and fewer days open. The analysis of data also showed a 30% greater pregnancy rate per unit of time. In other words, using weekly $PGF_{2\alpha}$ injections, more cows conceived earlier in lactation. Based on their reported costs of palpation ($2) and $PGF_{2\alpha}$ injections ($3), the weekly $PGF_{2\alpha}$ program cost $3.73 more per cow than the traditional rectal palpation program but reduced days open by 13 days. If you value the cost of one day open at only $1 per day, the $PGF_{2\alpha}$ program returned $9.27 per cow.

A comparison was made between a traditional program of heat detection and A.I.-breeding (control; no $PGF_{2\alpha}$) in which all cows were A.I.-bred at their first heat after 42 days in milk and a second program that used a milk progesterone (P4) test to identify high progesterone or presence of a CL in cows as a prerequisite for administering $PGF_{2\alpha}$ (milk P4 + $PGF_{2\alpha}$) on Monday. In this study, cows detected in estrus after the milk P4 + $PGF_{2\alpha}$ treatment were inseminated earlier and had significantly shorter calving intervals. Total cows conceiving in both programs were similar, but compared to the control, fewer cows (as a percentage of total culls) in the milk P4 + $PGF_{2\alpha}$ treatment were culled for reproductive failure (33% versus 55%) and more were culled for low milk production (34% versus 12%). Based on the costs of palpation ($2), $PGF_{2\alpha}$ ($3), and milk P4 ($6), the milk P4 + $PGF_{2\alpha}$ program cost $13.57 more per cow than the traditional A.I.-breeding program but reduced calving intervals by 23 days. If you value the cost of one day open at only $1 per day, the $PGF_{2\alpha}$ program returned $9.43 per cow.

Another study made the comparison of three reproductive programs in three dairy herds. Cows in one program received $PGF_{2\alpha}$ at 25 to 32 days in milk as a reproductive therapy (in lieu of

postpartum palpation) and then received one injection of $PGF_{2\alpha}$ between 53 and 60 days in milk to synchronize estrus for the first A.I.-breeding. Cows in a second group received $PGF_{2\alpha}$ between 25 to 32 days (reproductive therapy) and then their estrous cycles were synchronized with two injections of $PGF_{2\alpha}$ given 14 days apart (between 39 to 46 days and between 53 to 60 days in milk or two prebreeding $PGF_{2\alpha}$ injections). These two treatments were compared to a traditional program of postpartum palpations, including intrauterine infusions and other hormone therapies during the prebreeding phase and one injection of $PGF_{2\alpha}$ to synchronize estrus before the first A.I.-breeding. The cows receiving two prebreeding injections of $PGF_{2\alpha}$ were inseminated earlier and had fewer days open than the traditional palpation program. Further analyses indicated that cows in the two injection treatment had an 11% greater rate of first insemination and 10% greater pregnancy rate per unit of time. The authors concluded that the two prebreeding $PGF_{2\alpha}$ injection program improved reproductive performance of cows because of its direct effects on increasing heat detection efficiency rather than the beneficial postpartum therapeutic effect of the early $PGF_{2\alpha}$ injection (days 25 to 32). Based on palpation ($2.25) and $PGF_{2\alpha}$ costs ($2.25), the program with one prebreeding injection of $PGF_{2\alpha}$ saved $4.46 per cow, whereas the program with two $PGF_{2\alpha}$ injections saved $3.61 per cow compared to the traditional palpation program. Although the one-injection program did not reduce days open, it was more cost-efficient than the traditional palpation program. However, the two-injection program reduced days open by 6 days. If you only value the cost of one day open at $1 per day, the two-injection program returned $9.61 per cow.

The return or savings per cow in all three studies were very close: $9.27, $9.43, and $9.61. Because costs and other variables were not consistent in all three studies, one should not make direct comparisons of treatments used in each study. However, it is evident that use of a programmed breeding system is cost-effective. Summarized in the table is our estimate of the cost of applying the several different programmed breeding systems. Costs of hormones, palpations, milk progesterone tests, and labor for injections are listed based on actual studies or estimates. The total per cow cost does not include cost of heat detection, which is something that must be done every day. The least cost method was Program 4 and was followed by either Programs 1 and 3. Some conclusions: 1) the programs using $PGF_{2\alpha}$ are less expensive and resulted in equal or better reproductive performance than traditional veterinary programs that call for postpartum palpations in all cows as well as other therapies; and 2) much of the increase in reproductive efficiency and net economic benefit can be attributed to greater synchrony of estrus, which improved efficiency of heat detection. The selection of the best programmed breeding system for an individual herd somewhat depends on its rate of heat detection. Those herds having excellent heat expression and / or heat detection may be best served by programs with less hormonal intervention.

Hay Prices*

	Location	Quality	Price ($/ton)
Alfalfa	Southwestern Kansas	Premium	115–120
Alfalfa	Southwestern Kansas	Good	95–100
Alfalfa	South Central Kansas	Premium	100–110
Alfalfa	South Central Kansas	Good	90–100
Alfalfa	Southeastern Kansas	Premium	110–120
Alfalfa	Southeastern Kansas	Good	95–110
Alfalfa	Northwestern Kansas	Premium	115
Alfalfa	Northwestern Kansas	Good	80–90
Alfalfa	North Central Kansas	Premium	115–120
Alfalfa	North Central Kansas	Good	90–100

Source: USDA Weekly Hay Report, *Week ending October 8, 1996*

*Premium Hay RFV = 170–200
Good Hay RFV = 150–170

Feed Stuffs Prices

	Location	Price ($/ton)
SBM 48%	Kansas City	250–255.30
Cotton Seed Meal	Kansas City	204
Whole Cottonseed	Memphis	150
Meat and Bone Meal	Central United States	280–285
Blood Meal	Central United States	550–570
Corn Hominy	Kansas City	115–130
Corn Gluten Feed	Kansas City	105–110
Corn Gluten Meal 60%	Kansas City	335–360
Distillers Dried Grain	Central Illinois	140–145
Brewers Dried Grain	St. Louis	143–147
Wheat Middlings	Kansas City	89–92

Source: USDA Weekly Feed Stuffs Report, *Week ending October 8, 1996*

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