

Economical Evaluation of Reproductive Herd Health Programs

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Reproductive efficiency increases in importance as milk production per cow and size of herds increase on dairy farms. As farms become more intensified, dairymen need to be more aware of management practices that may affect reproductive efficiency. There is usually less time spent on individual animal reproductive performance as the amount of time for managerial decisions increases with larger herds. However, good reproductive practices still require management awareness of individual animal performance. If the optimum calving interval of 12.5 months or less is to be achieved, then dairymen need to recognize the importance of sound reproductive management programs. Dairymen should attempt to improve or maintain reproductive efficiency at desired levels under modern management practices in order to fulfill the potential for optimum milk production and net returns per cow.

Various dairy herd reproductive studies have been conducted to determine the value of such programs for dairymen (2,3,4,5,6,7,9). These studies indicated that dairymen can benefit from herd reproductive programs by improving the reproductive efficiency of their herds. A comprehensive dairy herd health program was conducted by Barfoot, et al. (1). Reproduction was one component of the health program. The workers reported that dairymen responded with different degrees of cooperation with the veterinarians and at different levels of expenditures for the health care services. The dairymen with the greatest degree of cooperation had the shortest days open intervals and the greatest returns on the additional investment in veterinary services and medication.

A controlled reproductive herd health study was conducted at The Ohio State University to evaluate the reproductive efficiency and economical aspects of such a program. There were 184 parturitions over a two-year period with the cows assigned to either a reproductive herd health group or emergency-call group. The major components of the programs are in Table 1. The routine genital examinations for the reproductive herd health group were scheduled every two to three weeks. Any herd health animal that received therapy subsequent to a genital examination was examined again at the next routine veterinary visit. The therapy frequencies, types, and dosages

were determined by the veterinarian for both groups. Cows in both groups were examined if they exhibited anorexia, reduced milk production, abnormal vaginal discharges or abnormal estrous cycles (less than 18 or greater than 24 days). The criteria for estrus detection were the usual estrus detection signs, however, genital examination information provided by the veterinarian was used in the herd health group to determine expected estrus. All reproductive genital criteria used for diagnosis are defined by Morrow (8).

Cows in both groups received examinations between 12 and 24 hours after breeding when abnormal estrous cycle lengths or abnormal vaginal discharges were observed at the time of insemination. In addition, animals in the herd health group, when bred four or more times, received postbreeding examinations and therapy if needed. The reproductive herd health animals were inseminated at first estrus following 40 days postpartum if uterine involution was normal. Pregnancy examinations were conducted between 30 to 45 days following the last insemination. For comparative reasons, the emergency-call group received the same genital examinations, but no therapy or management decisions resulted from the examinations. In addition, milk production and economical aspects of both groups were recorded.

Reproductive efficiency data concerning both groups are in Table 2. The herd health animals had better performance with an average of .64 less inseminations per conception compared to the emergency-call group. The average percentage of conception at first insemination was 43% for emergency-call animals and 54% for herd health animals. The herd health cows were inseminated at an average of 13.7 days earlier and had 43.4 fewer days open than the emergency-call group. The cows classified with abnormal rates of involution was 38.2% and 41.1% for herd health and emergency-call groups, respectively. The data in Table 2 indicates that the reproductive herd health program improved the reproductive efficiency for both abnormal and normal involuted animals compared to the emergency-call animals.

A major benefit of the herd health program was the use of the genital examination information provided by the veterinarian. The herd health cows with normal uterine involution, which required no postpartum therapy, averaged 8.6 fewer days to first in-

Table 1

Reproductive Herd Health and Emergency Call Programs

Routine Genital Examinations	Reproductive Herd Health Program	Emergency Call Program
Postpartum	Yes	No
Anestrus (days postpartum)	60	100
Postbreeding (four or more inseminations)	Yes	No
Pregnancy	Yes	No

Table 2

Comparison of Reproductive Performance Parameters

Groups			
Treatments			
Emergency Call	2.37	86.8	140.0
Herd Health	1.73*	73.1**	96.6***
Cows with Abnormal Uterine Involution			
Emergency Call	2.49	91.3	154.1
Herd Health	1.93*	78.8**	113.8***
Cows with Normal Uterine Involution			
Emergency Call	2.19	80.1	129.9
Herd Health	1.45*	71.5*	85.8**

*P<.05; **P<.01; ***<.001.

Table 3

Incidence of Reproductive Abnormalities*

Reproductive Abnormalities	Emergency Call	Herd Health
Pyometra	15.6%	12.8%
Endometritis	2.7	2.1
Metritis	20.0	21.3
Cervicitis	2.2	2.1
Ovarian cysts	25.5	14.9
Anestrus	8.9	2.1

*Percent of number of cows

Table 4

Reproductive Veterinary Costs

Groups	Per Cow Per Year (Mean)	
	Emergency Call	Herd Health
Service drive-in calls	\$ 4.41	\$ 4.15
Postpartum examinations	3.30	4.38
Postpartum therapy	4.89	4.56
Postbreeding examinations and therapy	1.95	.81
Anestrus examinations and therapy	.79	.73
Pregnancy examinations and therapy	-	2.31
Total	\$15.34	\$16.94

semination compared to the emergency-call cows with normal uterine involution. This improvement in reproductive efficiency may be contributed to the veterinarian's information. Further, the differences between days to first insemination for animals with abnormal and normal uterine involution in the herd health group was 3.9 days which was probably a result of the postpartum therapy. Thus, the major difference may be contributed to the reproductive in-

formation provided by the veterinarian at the time of the routine genital examination. This type of information can make the herdsman more aware of the reproductive status and may be used as a management tool for making decisions. For example, the herdsman was provided with information concerning expected estrus by the veterinarian which was used as a management tool in predicting future estrus. With the veterinarian as a major component of a herd health program, any health program depends on the ability of the veterinarian to provide information along with therapy.

Days lost due to missed estrus with cows that conceived were 30.2 and 47.4 days for herd health and emergency-call groups, respectively. In addition, 46.6% of the emergency-call animals were open beyond 100 days postpartum compared to 31.9% for the herd health animals. The emergency-call animals averaged 25% first inseminations beyond 100 days postpartum compared to 10.8% for herd health animals. In Table 3, the various reproductive abnormalities are presented. The incidence of ovarian cyst and anestrus was greater for the emergency-call animals. Anestrus examinations at 60 days postpartum and routine genital examinations in the herd health group offered the opportunity to diagnose cysts and anestrus animals earlier in the postpartum period compared to the emergency group. In the herd health group, 23% of cows examined for pregnancy between 30 and 45 days after last insemination were not pregnant. The pregnancy examination information was used for making management decisions concerning the open cows. The number of animals culled for reproductive reasons was 7 and 12 for herd health and emergency-call groups, respectively.

For milk production, the herd health animals averaged .26 kg more of solids-corrected milk than the emergency-call group. When the milk production was analyzed to determine the effects of days open and days dry, the herd health animals averaged .56 kg more of solids-corrected milk than the emergency-call group. There was greater milk production per day for the herd health animals because they had less number of days open and days dry.

The reproductive veterinary costs for both groups are in Table 4. The emergency-call animals required 55 drive-in service calls compared to 50 drive-ins for the herd health animals. The number of examinations for each group per drive-in call was 7.0 for herd health group and 2.8 for the emergency-call group. Therefore, the costs of drive-in service calls were lower on a per examination basis for herd health animals because there were more examinations per visit. The total yearly reproductive veterinary costs per cow were \$15.34 and \$16.94 for emergency-call and herd health groups, respectively. The income involved with both groups was determined by using current market values for the different cost variables. The cost data are presented in Table 5. Only the animals culled for reproductive reasons were used in the income comparison because these culls can be

Table 5

A Cash Flow Involving Receipts and Expenses of Both Programs

	Emergency Call	Herd Health
Receipts		
Milk value	\$4.03	\$4.08
Calves (male)	.12	.14
Reproductive culls	.10	.06
	\$4.25	\$4.28
Expenses		
Semen	.075	.049
Veterinary	.042	.046
Replacement (reproductive culls)	.290	.180
	\$.41	\$.28
Receipts - Expenses	\$3.84	\$4.00

directly related to the experiment. There were more calves and less reproductive culls in the herd health group. The reproductive herd health program returned \$.16 more per cow per day compared to the emergency-call group. The herd health program returned more per cow per day due to better reproductive efficiency and fewer reproductive culls.

In summary, the reproductive herd health program improved the reproductive efficiency in the herd health group compared to the emergency-call group. The herd health animals had fewer days to first insemination, days open and inseminations per conception. These improvements may have been due to the routine genital examinations, early detection of reproductive abnormalities, veterinarian's information and therapy, and greater management awareness

of the reproductive status of the animals. The veterinarian was an important part of the herd health program in providing information so management could perform better in making reproductive management decisions. The herd health program returned \$58.40 more per cow per year than the emergency-call group. Thus, the additional investment on veterinary services and medication yielded greater net income per cow and improved reproductive efficiency.

Acknowledgement

The author extends his thanks to Dr. L.E. Heider, Professor, Department of Veterinary Preventive Medicine, The Ohio State University, for his guidance and assistance during the experiment.

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