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G86-822 How to Estimate a Dairy Herd's Reproductive Losses

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How to Estimate a Dairy Herd's Reproductive Losses

Remedies for herd losses caused by calving interval, dry periods, A.I. performance, and age at first freshening.

Jeffrey F. Keown, Extension Dairy Specialist

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One of the major areas of lost income to the dairy producer is in the reproductive performance of the dairy herd. These losses are often overlooked because they are indirect costs. If producers could be given a monthly bill indicating the amount of money that improper reproductive management has cost them, then drastic changes would occur.

The majority of reproductive losses occur in the following areas:

1. Calving interval too long or too short.
2. Dry period too long or too short.
3. A.I. performance, i.e., services per conception, too high.
4. Heifers too old at first freshening.

All four of the major reproductive loss areas in a dairy herd are either under direct or indirect control of management. To properly manage these four areas a producer must be committed on a daily basis to improving the herd's reproductive performance. Soundly based reproductive management of a herd will substantially increase income and profits. Unlike other problem areas that may need adjustments, such as housing, facilities, equipment, or A.I. sire usage, the four major reproductive areas require little if any additional capital input. Improvements in the reproductive areas require mainly time and personal input. Let's look at each of the four areas and investigate where the problems can occur and some quick and inexpensive remedies.

Record Keeping

To remedy or improve any practice on the dairy farm records are of paramount importance. The breeding or reproductive area can only be altered and improved if a producer is willing to put time and effort into starting and faithfully maintaining a record-keeping program. The record-keeping program can be as complicated or as simple as one wants. A producer can buy breeding wheels or other devices that can make reproductive record keeping easy. There is, however, a very simple system that can be set up by any producer.

There are four essential dates a producer must record on an individual cow to improve reproductive performance:

1. Fresh date.
2. Heat dates.
3. Breeding dates.
4. Conception date or date heifer confirmed pregnant.

Let's look at each date and see how recording this information will increase reproductive performance.

- 1. Fresh date--** The fresh date is the most important because it triggers the entire reproductive system. It starts the next reproductive cycle. You should start to record heat dates immediately after freshening. Recording heat dates on cows even before they are ready to breed is important because it lets you know if the cow is cycling properly and gives you an idea of the cow's individual reproductive cycle. If you don't see a cow in heat within 50 days after freshening, a veterinarian should examine her to be sure she is cycling properly and does not have an infection or other reproductive disorder. In fact, it is an excellent practice to routinely have a veterinarian check each cow soon after freshening to be certain that all of the reproductive organs are functioning properly, and to treat any abnormal cows.
- 2. Heat dates--** All heat dates should be reported so that the cycle length can be estimated. A good practice is to record the days elapsed between observed heats so that you can check if the cow is cycling and if you are observing heat properly. If heats are not noticed it can be due to either reproductive failure or poor heat detection practices.

There are several heat detection aids that can be used to improve heat detection percentages. Among the more commonly used practices are:

- a. Pressure-sensitive mount detectors. These aids are usually glued to the rump and when the cow in heat is mounted by another animal the detector changes color. One word of caution, there is some false triggering; therefore some cows are bred that are not in heat. This system is excellent if used in conjunction with a visual observation or used with heat expectancy charts.
- b. Crayon, paint, or tail chalk. These methods are inexpensive and easy to use. They have some of the same problems as pressure sensitive mounts and they will probably need to be reapplied every 2-3 days.
- c. Altered animals. Animals, both males and females, that have either been physically altered or are given hormone shots can also be used as heat detectors. Bulls that have been vasectomized and heifers or cows that are given testosterone are good heat detectors. Of course, there are several disadvantages to this system. You must feed the detector animals and there are safety problems in having a bull around.

All of these aids can be used but the best aids are visual observation and the use of heat expectancy charts. Here are some heat detection tips:

Observation is the key to effective heat detection. Heat detection must become an ongoing concern. All farm employees should routinely check for heat. Why not have a clipboard in the barn (both cow and heifer barns) so that you can readily mark down cows observed in heat. Of course, a good visible I.D. system is essential for proper I.D. Freeze branding, chalk marks, neck chains, or ear tags are excellent methods for I.D. Make sure someone is assigned to check cows for one hour after each milking and at two other intervals during the day. Be sure it is an assigned task without any other responsibilities. Cows are active after milking and are more likely to mount as they are brought back into the barn or when going to pasture. Having a routine heat detection system is essential. Here are a few tips to consider if your cows are not being observed in heat and your veterinarian confirms that they are cycling properly:

- Are your cows on dirt or concrete? Cows on dirt are more likely to mount other cows. The footing on dirt is better than on concrete. If a cow slips on concrete she may not want to mount again. Try to get your cows on dirt at least twice a day if possible.
 - Are your cattle moved daily? If cattle are moved they become more active and are more likely to mount. If you can, move your cattle to another lot before heat checking. For this reason checking after milking is a good routine system to follow when coupled with other observation schedules.
 - Do you trim feet? As odd as it may seem, cows that have long hooves are less likely to stand to be mounted or to mount other cows. Following a routine foot trimming program will increase your herd's reproductive performance.
- 3. Breeding Dates--** Accurate recording of breeding dates is essential for successful pregnancy checks by a veterinarian. Every cow should be checked for pregnancy at 40-50 days after breeding. If you assume that she is bred just because she has not been observed in heat after breeding, you could seriously jeopardize your reproductive program. You may have several cows you think are bred that are open. These cows, when dried off, will be culling candidates. This can be eliminated by having all cows that are bred and not observed in heat for 40-50 days pregnancy checked by a veterinarian. The veterinarian is an integral part of your reproductive program. Every producer should be on a routine herd health program.
- 4. Conception Date--** Recording conception dates is important so that your cows are dried off at the right time (60 days before freshening). Recorded conception dates also help in assigning housing for dry cows, establishing feed requirements for fresh cows, and estimating income during the year from the sale of milk.

All records are important for a breeding program to be successful. If you don't have the time to record these events yourself then you can have your [Dairy Herd Improvement Association \(DHIA\)](#) record them for you.

The DHIA program offers several reports specifically to aid in reproductive management:

- **DHIA Form 208--**A barn wall chart for recording breeding and calving records.
- **DHIA Form 211--**A 21-day reproduction record. This is used to signal dates when cows should be observed for heat.

- **DHIA Form 212**--Lists management options such as cows to calve, cows to pregnancy check, cows to breed as well as dry off.
- **DHIA Form 217**--Contains information on breeding and offspring.

These forms offer anyone on DHIA test a flexible, accurate, and easy method to maintain a sound, cost-efficient reproductive program.

Reproductive Goals

Several goals have been established through research that are optimums for maximizing reproductive performance. These goals are listed in *Table I*. Remember, these are goals and optimums you should try to attain. Look these over and by using your personal records or your DHIA records, record your own herd's information on the worksheet. Once the worksheet is completed check those areas that need the most improvement.

Table I. Goals for reproductive evaluation.^a			
	Goal	My herd	Need help
Calving interval	365-380 days		
Avg. days to 1st observed heat	Less than 40 days		
% cows in heat by 60 days post calving	Greater than 90 days		
Avg. days open to 1st breeding	50-60 days		
Avg. days open to conception	85-100 days		
Services/concep.	1.5-1.7		
First service concep. rate			
A) replacements	65-70%		
B) producing females	55-60%		
% breeding intervals between 18-24 days	Greater than 85%		
% cows open greater than 120 days	Less than 10%		
Dry period length	45-60 days		
Avg. age at 1st freshening	24 months		
Avg. age at 1st breeding	15 months		
% cows pregnant less than or equal to 3 AI services	90%		
% cows pregnant on exam	80-85%		
Abortion rate	Less than 5%		
Cull rate for infertility	Less than 10%		
^a Adapted from Dairy Profit Series, Cooperative Extension Service Iowa State University, DyS-2852/December 1985.			

Potential Income

Your potential income gain, by improving your reproductive program, can be estimated by using the information you supplied on the previous checklist. *Table II* will help you estimate your dollar gains from improving your reproductive program.

Summary

As you can see, your herd reproductive program has a pronounced effect on your income. By following a sound record-keeping program and following a few basic principles you can greatly increase your net income. Increasing your reproductive program will not cost much; it will mainly require a commitment from you and your farm family to observe and keep accurate records.

Table II. Estimating your potential herd reproduction gain. ^b									
	Potential Gain								
<p>1. Calving interval (CI)</p> <p>A. \$ loss</p> <p>No loss if less than or equal to 365 days</p> <p>\$1/day over 365 days (up to 395 days)</p> <p>\$3/day over 395 days</p> <p>B. Your \$ loss:</p> <table border="0"> <tr> <td><i>Your calving interval</i></td> <td><i>Your loss</i></td> </tr> <tr> <td>365 days or less</td> <td>\$0</td> </tr> <tr> <td>365-395 day CI</td> <td>\$1 × _____ (no. days over 365)</td> </tr> <tr> <td>greater than 395 day CI</td> <td>\$30 + (3 × _____ no. days over 365)</td> </tr> </table>	<i>Your calving interval</i>	<i>Your loss</i>	365 days or less	\$0	365-395 day CI	\$1 × _____ (no. days over 365)	greater than 395 day CI	\$30 + (3 × _____ no. days over 365)	1. _____
<i>Your calving interval</i>	<i>Your loss</i>								
365 days or less	\$0								
365-395 day CI	\$1 × _____ (no. days over 365)								
greater than 395 day CI	\$30 + (3 × _____ no. days over 365)								
<p>2. Dry period (average days dry)</p> <p>A. \$ loss</p> <p>No loss if average dry days 45-60 days</p> <p>\$3/day if average dry days greater than 60</p> <p>\$3/day if average dry days less than 45</p> <p>B. Your \$ loss:</p> <table border="0"> <tr> <td><i>Your avg. dry days</i></td> <td><i>Your loss</i></td> </tr> <tr> <td>45-60</td> <td>\$0</td> </tr> <tr> <td>greater than 60</td> <td>\$3/day × _____ (no. days over 60)</td> </tr> <tr> <td>less than 45</td> <td>\$3/day × _____ (no. days less than 45)</td> </tr> </table>	<i>Your avg. dry days</i>	<i>Your loss</i>	45-60	\$0	greater than 60	\$3/day × _____ (no. days over 60)	less than 45	\$3/day × _____ (no. days less than 45)	2. _____
<i>Your avg. dry days</i>	<i>Your loss</i>								
45-60	\$0								
greater than 60	\$3/day × _____ (no. days over 60)								
less than 45	\$3/day × _____ (no. days less than 45)								
<p>3. Services/conception (S/C)</p> <p>A. \$ loss</p> <p>No loss if less than or equal to 1.5</p> <p>\$1/each 0.1 S/C over 1.5</p> <p>B. Your loss:</p> <table border="0"> <tr> <td><i>Your S/C (producing females)</i></td> <td><i>Your loss</i></td> </tr> <tr> <td>less than or equal to 1.5</td> <td>\$0</td> </tr> <tr> <td>greater than 1.5</td> <td>\$1 × _____ (S/C producing females - 1.5)</td> </tr> </table>	<i>Your S/C (producing females)</i>	<i>Your loss</i>	less than or equal to 1.5	\$0	greater than 1.5	\$1 × _____ (S/C producing females - 1.5)	3. _____		
<i>Your S/C (producing females)</i>	<i>Your loss</i>								
less than or equal to 1.5	\$0								
greater than 1.5	\$1 × _____ (S/C producing females - 1.5)								
<p>4. Average age at first freshening</p> <p>A. \$ loss</p> <p>No loss if less than or equal to 24 months</p> <p>\$30/month/animal for each month over 24</p>									

B. Your loss: <i>Your avg. age at first fresh</i> <i>Your loss</i> less than or equal to 24 \$0 greater than 24 $(\$30 \times \text{_____} \times \text{_____}) / \text{_____}$ <div style="display: flex; justify-content: space-around; width: 100%;"> No. months over 24 when first fresh No. 1st lactation animals No. producing females </div>				4. _____
5. Total estimated reproductive losses/producing female (1+2+3+4)				5. _____
6. Total estimated reproductive losses/herd Reproductive losses/herd= _____ \times _____ = <div style="display: flex; justify-content: space-around; width: 100%;"> Reproductive loss/producing female (line 5) No. producing females </div>				6. _____
^b Adapted from Dairy Profit Series, Cooperative Extension Service -Iowa State University, DyS-2852/December 1985.				

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