

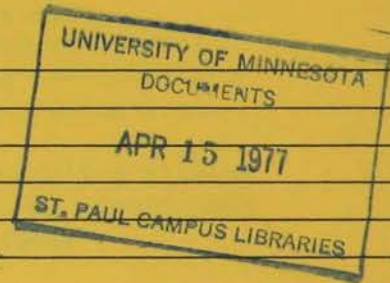
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Dairy Management Analysis Project

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AGRICULTURAL EXTENSION SERVICE UNIVERSITY OF MINNESOTA



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The 4-H Dairy Herd Management Project is designed to be interesting and educational for you. It should include all dairy animals on your farm, including your 4-H dairy project animals. This project will attempt to:

- * focus on total dairy herd management.
- * find problem areas and correct them.
- * develop accurate and useful records.
- * provide new information about your dairy situation.
- * improve your dairy operation.
- * suggest new ways of evaluating your dairy herd.

The following areas, along with suggested charts and tables, are included for your use:

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Select the areas you wish to work in each year. Of course, you don't have to complete this manual in 1 year. Modify the forms to fit your situation and needs. Your parents will be able to help you find some of the information. Check the following references for additional data:

- * Who's Who in Minnesota A.I. Sires.
- * DHI Monthly Herd Report.
- * Feeding the Dairy Herd (Extension Bulletin 218).
- * Dairy Reproduction Series (Extension Pamphlets 222-225, 227, 228).
- * Your Milking Machine (Dairy Husbandry Fact Sheet 5).
- * Other dairy fact sheets.

Check with your local county agent for these publications and other resources.

THE BREEDING PROGRAM

The breeding program in a dairy herd involves many important decisions that affect the profitability of the herd. Genetic improvement in the herd results from replacing poor cows with better ones. This selection process involves culling the least profitable cows, selecting outstanding bulls to sire herd replacements, and, in some cases, buying superior replacement animals. Generally, the more poor cows in a herd that are replaced by heifers sired by outstanding bulls, the faster that herd will improve. Herds that use outstanding sires and that raise every heifer calf born as a herd replacement can be expected to make the most improvement.

The two critical decisions are which cows to cull and which bulls to use.

Culling Cows

Looking back at why and which cows have been leaving the herd can reveal possible management problems and the effectiveness of the culling practices you use. Such a study of your herd can help you design a useful cow culling plan.

The table below provides an easy analysis for planning your culling strategy. This information can be summarized from the last 12 monthly DHI reports and the DHI Cow Ranking and Herd Summary.

A. Herd Summary

This summary can be taken from the upper right-hand corner of the most recent DHI Cow Ranking and Herd Summary Report (blue sheet).

Report date _____

	Percent- age left herd	EPA*(Cow selection differential)	
		Milk	Fat
Your herd	_____	_____	_____
State breed average	_____	_____	_____
Difference from state average	_____	_____	_____

*EPA = Estimated Producing Ability

B. Cow Summary: Why Cows Left

Using the last 12 monthly reports, count the number of cows that left the herd for the various reasons and the number plus (+) or minus (-) Estimating Producing Ability (EPA) cows in each left-hand category from the Cow Ranking and Herd Summary Report.

DHI CAR* code	Reason left herd	Number cows left	Average age	(From Cow Ranking and Herd Summary)	
				Number +EPA	Number -EPA
<u>Volunteer</u>					
3	Sold for low production	_____	_____	_____	_____
2	Sold for dairy	_____	_____	_____	_____
	Subtotal	_____	_____	_____	_____
<u>Forced</u>					
4	Sold for reproduction	_____	_____	_____	_____
7	Sold for udder problems	_____	_____	_____	_____
6	Died	_____	_____	_____	_____
5	Injury, disease, or other	_____	_____	_____	_____
	Subtotal	_____	_____	_____	_____
	Totals	_____	_____	_____	_____

*Condition Affecting Record codes from the monthly DHI report

What are the two major reasons cows left the herd?

1. _____
2. _____

How many +EPA cows and -EPA cows left the herd this past year?

-EPA _____ +EPA _____

What is the EPA culling ratio? (Number - ÷ Number +)

The EPA culling ratio is the number of -EPA (below average) cows leaving for each +EPA (above average) cow leaving.

Culling evaluation

Your herd EPA culling ratio

3:1 Excellent
 2:1 Good
 1:1 Fair
 ½:1 Poor

_____ : 1

Comment on how culling strategy can be improved and management action can increase the EPA culling ratio, increase volunteered culls, and reduce forced culling.

Culling Strategy and Decisions

Now that you have analyzed what's been happening, you are prepared to develop a plan.

The first step is to make an inventory of future herd replacements so you will know how many cows can be culled. The future culling opportunities for the next 2 years will depend on replacements available. If the herd is increasing in size, fewer cows will be available for culling for the number of herd replacements available.

The average Predicted Difference for milk and fat will provide an indication of the relative producing ability of each new group of herd replacements as compared to the older cows in your herd.

	<u>Number of cows</u>	<u>Sire's average Predicted Difference</u>	
		<u>Milk</u>	<u>Fat</u>
A. Milking herd			
Number of cows in the milking herd	_____	_____	_____
Number of first lactation cows in milk	_____	_____	_____
B. Yearlings			
Number of heifers over 2 years not in milk	_____	_____	_____
Number of bred yearlings under 2 years	_____	_____	_____
Number of open yearlings under 2 years	_____	_____	_____
C. Calves			
Number of heifer calves less than 1 year raised for replacements	_____	_____	_____

Dairy producers replace about 28-32 percent of their herds each year. In other words, most herds have one first lactation cow for every three to four cows in the milking herd. The new cow entry percentage can be calculated for your herd now and for 2 years into the future by dividing the number of new cows (first lactation animals, yearlings, or calves) into the herd size or expected herd size for the appropriate year.

	<u>Number of new cows</u>	<u>Expected herd size (milking herd)</u>	<u>New cow entry percentage</u>
Now (first lactation cows)	_____	_____	_____
Next year (cows over 2 years and yearlings not in milk)	_____	_____	_____
Two years from now (heifer calves)	_____	_____	_____

If the new cow entry ratio goes below 25 percent, it may be due to one of the following:

1. Increased size of milking herd.
2. A small number of heifer calves born.
3. Higher than normal calf death loss (above 8%).
4. Heifer calves or yearlings sold.

A low percentage of first lactation animals suggests purchasing additional quality replacements to allow for an effective culling opportunity.

Evaluation and comments on herd culling opportunities and how problems can be corrected:

Deciding Which Cows to Cull

Culling is a continuous process of gathering facts and making judgments about an animal's present and future profitability. Making a list of culling candidates monthly is a useful practice. It provides a way to routinely evaluate and identify potential culls and to make final culling decisions easier. Production and health records of each animal, along with your knowledge about each animal, need to be considered in making the list of culling candidates.

The cows that have to go (forced culling) should be considered first. These are cows that either have poor profitability now or will have in the near future because of unsoundness or other functional problems. Unfortunately, this group often includes cows that have been high-producing, profitable animals that have developed problems. Keeping this group as small as possible will be influenced by the quality of management. A small number forced from the herd will make possible the voluntary culling of a larger number of cows.

Cows that are voluntarily culled are those removed because of poor profitability. Low production is the best criterion to use.

The list below will help you identify the culling candidates in your herd. In practice, final culling decisions are usually based on more than one of the considerations.

1. Cows not pregnant after 120 days in the current lactation. If the cow is producing 20 percent or more above the herd average, this time can be extended to 150-160 days. Include cows that will have a long dry period (more than 70 days).
2. Cows with serious health problems from which they are unlikely to recover (brucellosis, tuberculosis, cancer, leukemia, staph mastitis, and serious cases of IBR, BVD, etc.)
3. Cows that have serious permanent physical defects that affect productivity or the amount of labor required for special care (feet, leg, or udder problems, injured teats).
4. Cows with chronic infections such as mastitis or kidney problems that require continuous or repeated treatment.
5. Cows that are slow milkers or have poor dispositions or other characteristics that affect your ease of care, time, or safety.
6. Cows in the lowest 20 percent of the herd based on current lactation (2X-305-M.E.). Example: In a 40-cow herd, list the 8 (.20 X 40 = 8) cows that rank the lowest on an estimated 2X-305-M.E. basis on the DHI monthly report.
7. Early lactation cows that have a low daily income over feed cost that does not pay fixed costs and an adequate return for labor, care, and milking.
8. Cows having the lowest EPA ranking. This rank must be considered in conjunction with the cow's current profitability and future calving date.

The final culling procedure will now be easier because all candidates are listed for your analysis. The job left is for you to rank these cows. You will find some cows appearing among these candidates month after month, which will give added support for their removal.

Remove a cow when she becomes unprofitable. Income over feed cost per day can be a helpful guide to good timing. Consideration may also be given to market prices of cattle, feed supply, the time replacements will be entering the herd, labor supply, facilities, etc.

The table below provides a way to organize your monthly list of culling candidates and make your final decisions.

Culling candidates

Cow name	Current performance					Previous records, EPA					Comments or conditions
	Estimated 2X-305-M.E.		Fat	Rank in herd	Income over feed Cost/day	Number of lactations	Milk	Fat	Herd rank	Date due	
	Age	Milk									

Sire Selection

Sire selection offers the greatest opportunity for rapid improvement if all heifers are raised for replacements.

The most rapid genetic improvement in production will result from using the best accurately proven sires available. These will be sires with a high predicted difference with a high repeatability value.

Because milk sales account for most of the income on most dairy farms, intense selection for milk will result in the greatest improvement. The proven sires available through artificial breeding are ranked within each breed and A.I. organization in Who's Who in Minnesota A.I. Sires. The sires are ranked on predicted difference dollars or on their ability to transmit profitable production to their daughters. These are official USDA DHI Sire Summaries based on all daughters of each sire with official DHI records in the United States. 4-H dairy project members can receive an annual subscription (three issues) to Who's Who in Minnesota A.I. Sires by sending a card or letter request to: Dairy Extension Office, 101 Haecker Hall, University of Minnesota, St. Paul, Minnesota 55108. Please indicate in your request that you are a 4-H dairy project member.

The sire ranking list will help you identify quickly the best production transmitting sires. Make a list of the sires that meet your minimum production requirements.

Sire candidate list

Sire name	Predicted Difference					Major weaknesses	Primary strengths	Use plans, number of matings
	Repeat-ability	Milk	Per-centage of fat	Fat	Dollars			

After you have listed the best group of production sires, find out what the major strengths and weaknesses of each bull are for other traits such as udders, feet and legs, size, etc., and add these to the table above. The best source of this information is the A.I. bull book. Or you may want to talk to people who represent the A.I. organization or to other dairy producers. Unfortunately, present day evaluations for nonproduction traits are not as reliable as they are for production, which means more mistakes will be made.

Besides proven sires, you may consider using a group of outstanding young sires that are being progeny tested. Use each of these young sires sparingly.

After listing your sire candidates and compiling other information, review the candidate list and decide if there are any unacceptable candidates. Cross unacceptable sires off your list.

Planning the Matings

After you have selected the sires, the next step is to plan the matings for each cow in the herd. Through planned matings, you can breed to correct the faults or weaknesses your cows may have and improve the performance or profit of their offspring.

The mating plan worksheet on the following page provides a handy way to plan matings for your herd. First, list each cow in your herd, her sire, and her EATA (Estimated Average Transmitting Ability) from the DHI Cow Ranking and Herd Summary or from the individual cow slips. Second, evaluate each cow for her major weaknesses. Remember the most serious faults are those that limit the animal's ability to be profitable. The third step is to choose from the sire candidate list your first and second choice sires that are most likely to improve or correct the cow's most serious weakness.

As you do this, you will find no perfect bulls or cows for all traits. Greatest improvement will result if you focus your mating plan on correcting each cow's most serious limitation. Be careful not to mate your cows to closely related sires. Inbred animals are usually smaller at birth, grow slower in early life, and produce less milk.

It is wise to make a first and second choice of sire mates for each cow in case the semen is not available on your first choice when the cow is to be bred.

After the cow or heifer has been bred and diagnosed pregnant, circle which sire she has been mated to and enter his most recent Predicted Difference for milk and fat.

You can now estimate the expected genetic value of your planning by adding the cow's EATA to the sire's Predicted Difference. This is a pedigree estimate of the future offspring's genetic value in pounds of milk and fat above or below breed average. The future EATA or Predicted Difference would be half of this genetic value. These estimates have limited accuracy for predicting future performance of individual offspring, but they are useful in predicting the genetic value of the female calves born that will be raised for replacements. They thus provide a useful way to evaluate the expected quality of each year's herd replacements.

Record the sex of the calf born, its identification, birth date, and any appropriate comments on its health.

All parts of the breeding program should be routinely evaluated and reviewed for ways it can be improved. Use the space below for comments on how you can improve your program next year.

Worksheet for planning matings

Cow name	Sire's I.D.	Milk	Fat	Cow's faults needing improvement	Sire choices (name)		Predicted Difference of service sire		Pedigree estimate of offspring		Sex of calf	Birth date	Calf I.D.	Comments	
					First	Second	Milk	Fat	Milk	Fat					

Averages _____

FEEDING

Feed Inventory

In the fall, check whether you have sufficient feed to last until the next harvest season starts. Do this before the herd goes on its winter feeding schedule. If your feed supply is short, you may be able to make adjustments to best utilize it. Make arrangements to buy what you need or to sell some of the animals. Fall is usually a good time to weed out undesirable animals. Also, feed prices should be low at this time.

There are many tables available for estimating tonnage of silage and hay. Your county agent can give you this information. With baled hay, weigh a few bales and get the average weight. Then multiply by the number of bales.

First make an inventory of your supply (table 1). Then estimate your needs for the year and record them in table 2. Now you can make adjustments. For example, if the figures show a shortage of hay and a surplus of silage, increase the silage above the present figures and cut down on hay. The availability of good hay in your community will affect your decision. If you have plenty of all feed, you are in an excellent position for the winter.

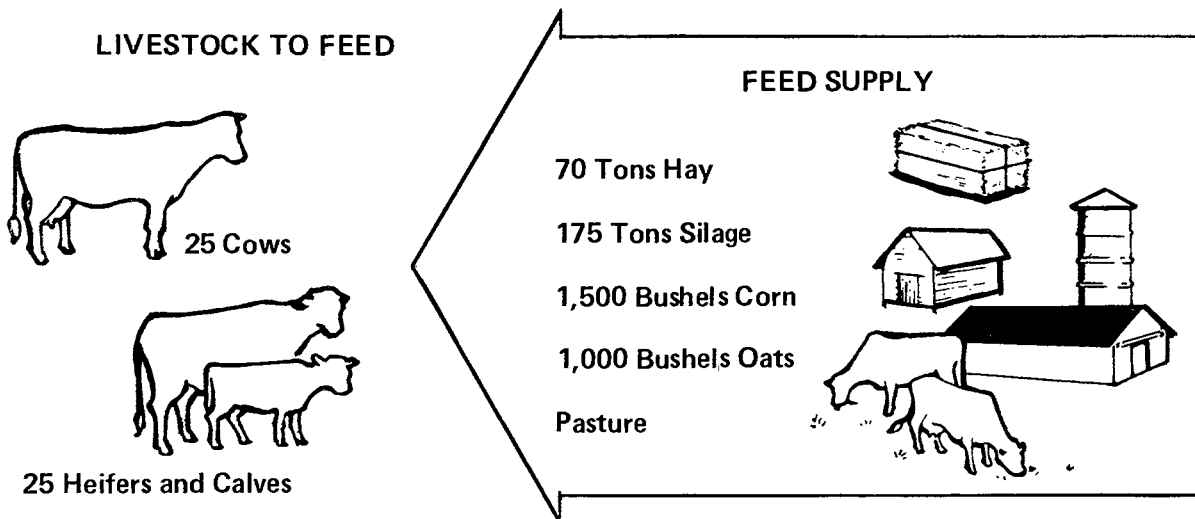


Table 1. Feed inventory (Date _____ Days in your feeding period _____)

_____ Tons alfalfa hay
 _____ Tons corn silage
 _____ Tons hay silage
 _____ Bushels corn = _____ tons less * _____ tons = _____ tons
 for dairy herd
 _____ Bushels oats = _____ tons less * _____ tons = _____ tons
 for dairy herd
 _____ Bushels barley = _____ tons less * _____ tons = _____ tons
 for dairy herd

*Less than needed for seed or other livestock

Table 2. Estimating dairy feed needs

Number cattle in herd Class	Fed per day per animal			Fed per day for entire herd			Fed for entire feeding period to herd		
	Hay	Silage	Grain	Hay	Silage	Grain	Hay	Silage	Grain
_____ Cows									
_____ Yearlings									
_____ Calves									

Total _____									
Inventory from table 1									
Balance or shortage									

Analyzing Protein Costs

Protein is important in the ration of dairy cows, heifers, and calves. It is needed for growth and milk production. Homegrown feeds like alfalfa hay are relatively rich in protein. However, it is often necessary to fortify the grain ration with high protein concentrates to bring the total ration up to required protein levels. Concentrates rich in crude protein are soybean meal (44 percent), linseed meal (37 percent), and commercial protein dairy concentrates.

Cattle can change the proteins they eat into those they require, so the source of the protein is not important. But the amount the ration contains and the cost per pound of purchased protein are important.

Buy the protein supplement that provides a pound of protein for the least money. Check on the price of various protein concentrates in your community. Then figure the cost per pound of crude protein and fill in table 3. By dividing the cost of 100 pounds by the protein percentage, you will have the cost per pound of protein. Then you will know where to buy protein for the least money.

Table 3. Estimating cost per pound of crude protein in protein supplements

Name of high protein concentrate or supplement	Price per ton, dollars	Price per 100 pounds, dollars	Percentage crude protein	Cost per pound crude protein, dollars
(example) Soybean meal	200.00	10.00	44	.23
Soybean meal				
Linseed meal				
Urea				

Level of Grain Feeding

The amount of grain fed should be determined by the amount and quality of forage fed and the amount of milk produced. However, the upper limits of economical grain feeding can be determined by observing a cow's response in increased milk. It pays to feed an additional \$1 worth of grain if the cow produces at least \$1 worth more milk.

To see where these limits might be, test one or more cows that have been fresh for 2-3 weeks. Increase their amount of grain to see how high you can go and still get your extra cost back in added milk. As soon as a cow shows signs of not eating all her grain, you know her maximum has been reached. The information you get from a few cows will serve as a guideline for other cows in the herd. Keep your record in table 4.

With milk at \$7 per 100 pounds and grain at 5 cents per pound, the following illustration shows that it paid to feed this cow 14 pounds of grain daily.

Date	Pounds grain fed daily	Cost of grain, dollars	Cost of forage, dollars	Pounds milk	Value of milk, dollars	Return over feed cost, dollars
February						
1	10	.50	.50	30	2.10	1.10
2	11	.55	.50	31	2.17	1.12
3	12	.60	.50	32	2.24	1.14
4	13	.65	.50	33	2.31	1.16
5	14	.70	.50	34	2.38	1.18
6	15	.75	.50	34	2.38	1.13
7	16	.80	.50	34	2.38	1.08
8	17	.85	.50	35	2.45	1.10
9	18	.90	.50	35	2.45	1.05
10	19	.95	.50	35	2.45	1.00
11	20	1.00	.50	35	2.45	.99

Level of Protein in the Grain Mixture

To be certain your ration is adequate in protein, check one or two cows who have been fresh about 2 months and who are milking heavily. Continue the present ration and add 1 pound per day of a protein concentrate. If milk production increases after 1 week, your ration was low in protein. Other references to check are Thumb Rules for Dairy Cow Feeding (Extension Folder 269) and the Minnesota Dairy Ration Balancer (Extension Folder 292).

If you prefer, boost the protein fed to the entire herd. Then see if you sell more milk in a few days. Compare the value of increased milk production with the cost of extra protein to see if this pays. You cannot afford to let milk production drop because of a protein shortage.

Table 4. Estimating level of grain feeding for milk produced

Date	Pounds grain fed daily	Cost of grain fed	Pounds milk	Value of milk	Return over feed cost

REPRODUCTIVE PERFORMANCE

Production and profit depend on good reproductive performance. Day-to-day management is required to achieve an average calving interval in a herd of 13 months or less. Good usable records can be worth many dollars in helping you achieve good reproductive performance.

A good starting point in planning your reproductive management program is an analysis of your herd's reproductive performance.

Reproductive Performance Analysis

1. Past reproductive performance

The DHI Cow Ranking and Herd Summary Report (top of sheet) provides you with the herd's calving interval. Also count the number of cows culled for infertility (from monthly DHI reports).

a. Calving interval (DHI Cow Ranking and Herd Summary Report)

Your herd _____ days

State average _____ days

Difference _____

b. Number of cows culled for infertility in past 12 months _____.

Profits are seriously curtailed if the calving interval extends beyond 13 months. Infertile cows culled from the herd also represent reproductive problems not measurable by the calving interval; these problems should be considered when you review the total herd picture.

2. Problem investigation

The above herd analysis can indicate whether your herd has a problem. If it has, try to determine the cause. Some things to check include:

a. When are cows showing first heat after calving? _____ average days

Note: Cows should exhibit first heat within 45 days. Longer periods to first heats may be due to missed heats, infections or diseases, or to inadequate nutritional levels of energy, phosphorous, etc.

b. What is the average number of days between heat dates before breeding? _____

(Normal heat cycles are 18-24 days.)

Count the number of heats that fall into the following categories:

_____ less than 18 days

_____ 36-48 days

_____ 18-24 days

_____ more than 48 days

_____ 25-35 days

Note: Short heat cycles (less than 18 days) are an indication of hormone imbalances such as cystic ovaries. Long heat cycles are an indication of heat detection problems.

c. What is the average days from calving to first breeding? _____

Note: Cows should normally be bred no later than 80 days after calving or, as a herd average, 70-75 days after calving. Reproductively healthy cows can be bred as early as 50 days after calving.

d. Count the number of cows requiring the following number of breedings to become pregnant:

_____ One service	_____ Four services
_____ Two services	_____ Five services
_____ Three services	_____ More than five

What percentage of the herd was successfully bred with three or fewer services? _____

(Total cows \div number of successful breedings with three or fewer services)

Note: Under optimal fertility, 90 percent of the cows will be bred within three or fewer services. If more than three services are required for more than 20 percent of the cows bred, the problem is serious and veterinary assistance should be used.

e. Count the number of cows that fit the following return-to-service cycles:

_____ less than 18 days	_____ 36-48 days
_____ 18-24 days	_____ more than 48 days
_____ 25-35 days	

Note: See notes above (question b) for comments on cycles of less than 18 days and cycles of 36-48 days. Postbreeding cycles of 25-35 days are related to embryonic death (conception occurred, but the embryo died 16-18 days after breeding). Early embryonic death is characteristic of a reproductive disease or possibly a management problem. Veterinary help is recommended.

f. How many cows show an abnormal whitish or yellowish discharge? _____

Note: Normal discharge is clear and translucent. Whitish, cloudy, or yellowish discharge is a clue to infections in the reproductive tract. These require veterinary treatment and may be caused by reproductive diseases, retained placentas, unclean calving facilities, or unsanitary calf delivery methods or other treatment.

g. How many cows had problems related to calving?

_____ abortions	_____ retained placentas
_____ difficult delivery	_____ milk fever

Note: Abortions can be related to one of the following: reproductive diseases such as brucellosis, leptospirosis, IBR, or BVD; nutritional deficiencies; or overconsumption of certain materials. A high incidence of difficult deliveries requiring assistance commonly occurs in small heifers, suggesting a young stock management problem. There is also evidence that some bulls sire particularly large calves that increase the incidence of difficult births. These bulls should not be used on first-calf heifers. Frequent occurrence of retained placentas may be related to abortions, difficult calvings, diseases, and vitamin A deficiency. A high frequency of milk fever suggests a nutritional problem, possibly low levels of phosphorous or vitamin D fed the dry cow.

3. Current reproductive status

The current reproductive status of your herd can be evaluated by estimating the herd's expected calving interval. This estimate can be easily determined from the most recent DHI monthly report. Determine the months between date fresh and date due by counting the cows in the herd at the various intervals indicated in the table below for cows that have been bred.

<u>Expected calving interval</u>	
<u>Number of months</u>	<u>Number of cows</u>
Less than 12 months	_____
12-13 months	_____
14-15 months	_____
More than 15 months	_____

Cows with expected calving intervals of more than 13 months are cause for concern.

Keep in mind that you cannot assume any cow to be with calf unless she has been examined for pregnancy by your veterinarian.

Other cows in the herd may not be bred because they are not cycling (coming into heat) or because it is too soon after calving. A quick summary of the herd status can be obtained from the most recent DHI monthly herd report by counting the cows that are open at various intervals after calving.

Status of open cows

Days since calving	Number of cows	Management notes
Less than 35 days	_____	It is too early to breed these cows, but they should be observed closely for abnormal discharges and heats. Schedule these cows for a prebreeding reproductive health exam 35-45 days after calving. Have your veterinarian examine and treat any abnormal discharges or any other health problems.
35-60 days	_____	A prebreeding veterinary exam will determine reproductive health. Cows in good reproductive health may be bred. First heat after calving should occur by 45 days. Use your records.
61-90 days	_____	This is the critical time to breed the cow to maintain a 365-day calving interval. Be a dedicated heat detector. If these cows are not cycling normally (every 18-24 days), have them examined by your veterinarian. Be sure they are receiving their nutritional needs for energy and phosphorous.
91-120 days	_____	Profits are suffering if these cows are not pregnant. Action and appropriate treatment are critical. Cows open more than 120 days must be considered culling candidates unless they are in the upper 20 percent of the herd for production.
121-150 days	_____	Time is money lost. These cows must be considered for culling.
Over 150 days	_____	Cows open more than 150 days will be spending many low-producing or dry days in the herd. Only exceptional producers should not be culled.
Total cows open	_____	

The above summary of your herd will reveal the reproductive status for open cows. The smaller the number of cows open less than 90 days the better.

In reviewing the current reproductive status of your herd, remember that cows that have been bred may not be pregnant. Failure to return to heat after breeding is an uncertain indicator of pregnancy. A pregnancy exam by a skilled veterinarian is the only certain way of determining pregnancy early. The best

time for a pregnancy exam is before 42 days after breeding so that any problems can be immediately treated and corrected. This early detection may save valuable time. About 5 percent of pregnant cows show signs of heat, so heats after breeding do not necessarily mean the breeding was unsuccessful.

Did you uncover any problems in your herd from the above analysis? _____

Discuss: _____

If you did, go back and try to pinpoint what it might be. Use the previous section to learn more about it.

What did you find and how can the situation be corrected? _____

Managing Reproduction

Records are a vital part of management. There are many facts you must keep straight so you can take the right action at the right time.

All cows in your herd fit into one of the following reproductive categories:

- * Cows to dry up and calve.
- * Cows too soon to breed.
- * Cows to breed.
- * Cows bred and possibly pregnant.
- * Cows requiring veterinary service.

You can easily make up forms for listing the cows in your herd that fit into the first four categories. The fifth category, "Cows Requiring Veterinary Service," will help insure that problem cows receive needed treatment early. Each time a cow's status changes, cross her off one list and add her on another. Be sure to keep your lists up-to-date and use them daily to schedule your management action.

The following table provides some management guidelines. Most of the information can be taken from the most recent monthly DHI report.

Reproductive management action guidelines

<u>Status of cows</u>	<u>Management principles</u>	<u>Added information</u>
<u>Cows to dry up and calve</u> List all cows that are positively pregnant. A pregnancy exam by a skilled veterinarian can determine pregnancy as early as 35 days after breeding.	<ul style="list-style-type: none">* Dry periods of 45-60 days are recommended for maximum profit.* Cows should be closely supervised and have a clean, sanitary place at time of calving.	<ul style="list-style-type: none">* Record calving due date.* Record expected dry date.

Cows too soon to breed

Put cows on this list when they freshen.

- * Keep a close watch for all heats and make a record of them.
 - * Watch for any health problems and abnormal discharges, particularly with cows who have had calving problems or retained placentas.
 - * A prebreeding exam at 35-45 days can detect problems early and save time.
- * Record abnormal conditions.
 - * Make a record of all heat dates.
 - * Note any calving difficulties, retained placentas, milk fever, etc.
-

Cows to breed

List all cows that have been examined and found to be in good reproductive health and their prebreeding exam date. Also list open cows more than 60 days since calving and those found open on a pregnancy exam.

- * Cows must be pregnant by about 85 days after calving to maintain a 12-month calving interval.
 - * Watch these cows very closely for heat.
 - * Use a calendar to anticipate each heat.
- * Record heat dates and breeding dates and make notes of all abnormal conditions.

Cows bred and possibly pregnant

List all cows on this list once they are bred.

- * Pregnancy status of cows is uncertain unless they are examined by a skilled veterinarian. Schedule exams 35-45 days after breeding.
- * Anticipate return to heat in 18-24 days; watch closely.

- * Record breeding date.
- * Record scheduled heat and pregnancy check dates.
- * Record pregnancy exam results.

Cows requiring veterinary service

List all cows that require veterinary attention for any health problems.

- * You may be able to save veterinary service calls by being sure all problem cows or potential problem cows are examined when the veterinarian is on the farm.
- * Early diagnosis and treatment of health problems can save time, production, and money.

- * Make a note of problems as you observe them.

The following extension pamphlets on dairy reproduction provide good supplemental reading:

- * Heat Detection and Time to Breed, Extension Pamphlet 222.
- * Nutrition and Reproductive Performance, Extension Pamphlet 223.
- * Breeding Dairy Heifers, Extension Pamphlet 224.
- * Records--Not Luck--for Good Reproductive Performance, Extension Pamphlet 225.
- * Abortions and Calving Problems, Extension Pamphlet 227.
- * Why Some Cows Don't Conceive, Extension Pamphlet 228.

To obtain these pamphlets, contact your county extension office or write to: Bulletin Room, Coffey Hall, University of Minnesota, St. Paul, Minnesota 55108.

Management action list

<u>Cows to calve</u>				<u>Cows too soon to breed</u>			
Barn name	Date due	Date to begin lead feeding	Calving date or action plans	Barn name	Date fresh	Date of first heat	Notes on calving and date of prebreeding exam

Herd _____

Test date _____

Test period end date _____

Management action list (continued)

<u>Cows to breed</u>				<u>Cows bred and possibly pregnant</u>			<u>Cows requiring veterinary service</u>		
Barn name	Days in milk	Heat date	Action plans	Barn name	Date bred	Check within 30-45 days of breeding	Barn name	Date fresh	Problem and date observed

Herd _____

Test date _____

Test period end date _____

MANAGEMENT

Milking Machine Checkup

The milking machine is an essential item on most dairy farms. If operating properly, it will do a good job and save labor. However, many things cause a milking machine to do a poor job, resulting in increased mastitis, poor milking, and reduced production. Your milk machine serviceman has equipment for checking the performance of your machine. Get a copy of Dairy Husbandry Fact Sheet 5, Your Milking Machine, for more information.

Fill in these facts about your milking machine:

1. Number of units _____
2. Kind of milk machine and year installed _____
3. Capacity of your pump _____ (cubic feet per minute)
4. Cubic feet per unit (answer 3) _____
(answer 1)
5. Type of inflation liner _____
6. Vacuum with no milk machines on _____ (inches)
7. Vacuum with all units on _____ (inches)
8. Vacuum with one unit on the floor drawing air _____ (inches)
9. Size of vacuum line _____
10. Size of milk line _____

Diagram your milking system. Be sure to include pump location, regulator, vacuum gauge, shape of the vacuum lines, and shape of pipelines.

Calf Raising

Your calf raising program will determine the genetic progress of your herd. If you raise all your heifers, greater culling can be practiced. Bull calves can be sold for veal or dairy beef, or they can be raised. Any calf losses represent financial loss. Below is an outline for evaluating your calf raising program.

1. Number of cows in the herd _____
2. Number of calves born alive _____
3. Number of calves born dead _____
4. Number of heifer calves born alive _____
5. Number of sets of twins _____ Number of sets raised _____
6. Number of heifers weaned _____

7. Number of calves per cow $\left(\frac{\text{answer 2}}{\text{answer 1}}\right)$ _____
8. Percentage of heifer calves $\left(\frac{\text{answer 4}}{\text{answer 2}} \times 100\right)$ _____
9. Percentage of heifer calves raised $\left(\frac{\text{answer 6}}{\text{answer 4}} \times 100\right)$ _____
10. Ratio of cows to replacement heifer calves $\left(\frac{\text{answer 1}}{\text{answer 6}}\right)$ _____

Several areas of concern are listed. Briefly describe your situation in each area.

Area of concern	Your situation
Difficult births	
Navel cord (dipping)	
First-milk colostrum	
Surplus colostrum	
Injectable vitamins A, D, and E	
Ventilation and fans	
Bedding	
Pen size (square feet)	
Milk replacer (type and amount)	
Age at weaning	
Calf starter	
Scours	
Pneumonia	
Bull calf disposal	

Discuss your calf raising program and facilities. How do you plan to change or improve it next year?

Other references include:

- * Dairy Husbandry Fact Sheet 9, Using Colostrum to Raise Dairy Calves.
- * Dairy Husbandry Fact Sheet 10, Milk Replacer in Raising Dairy Calves.
- * Agricultural Engineering M-149, 30' x 44' Insulated Calf Barn with Individual and Group Pens.

Milk Quality

Milk is a perishable product that must be carefully handled to maintain top quality. Dairy producers are continually monitored to insure that high standards are maintained by milk plants. Record the quality test results from your plant. If any quality test result decreases, immediately correct the potential problem.

Record of quality tests on milk delivered

Date of test	Mastitis score	Bacterial count	Sedimentation test

Other references to check include:

- * Food Science and Nutrition Fact Sheet 7, Oxidized Flavors in Milk--Cause and Control.
- * Food Science and Nutrition Fact Sheet 9, Cleaning and Sanitizing on the Dairy Farm.
- * Food Science and Nutrition Fact Sheet 10, Bacteria in Milk.
- * Food Science and Nutrition Fact Sheet 11, Keep Your Bacteria Count Down.
- * Food Science and Nutrition Fact Sheet 17, Handling Milk in Bulk.

Disease Control

Herd health must be watched carefully. Accurate records can quickly indicate problems that should be corrected. Use the table below for summarizing the occurrence of common dairy disease problems. Divide the number of animals in the herd into the number of cases to calculate the level in your herd.

Disease	Number of cases	Number of cattle	Percentage
Calf scours (example)	4	32 calves	25%
Calf scours			
Calf pneumonia			
Pinkeye			
Warts			
Ringworm			
BVD			
IBR			
Metritis			
Mastitis			
Winter dysentery			
Milk fever			
Ketosis			
Displaced abomasum			
Hardware			
Foot rot			
Others (list)			

In the following table, list all veterinary expenses. Decide which age group it fits. At the end of the year, divide the total costs by the number of animals in that group to calculate the average cost per animal.

Date	Service performed	Cost		
		Calves	Yearlings	Cows
Jan. 2	(examples) Milk fever treatment			\$12.00
Jan. 4	Calf scours treatment	\$10.00		
Total				
Number of animals				
Average per animal				

Fly and Insect Control

Sanitation and good management practices are essential to controlling insects in the dairy. Chemicals are of little value unless breeding places are cleaned up. The areas listed below should be given proper attention. Describe your insect control program.

Area of concern	Your situation
<u>Materials used (chemicals)</u>	
<u>Fly control in the barn and milking parlor</u>	
<u>Fly control on the dairy cow</u>	
<u>Fly control in the milk room</u>	
<u>Fly control in the calf barn and on calves</u>	
<u>Mosquito control</u>	
<u>Grub control</u>	
<u>Lice control</u>	
<u>Worm control</u>	
<u>Others (list)</u>	

Other references to check include:

- * Entomology Fact Sheet 25, Face Flies.
- * Entomology Fact Sheet 35, Fly Control for the Dairy Herd.
- * USDA Leaflet 527, How to Control Cattle Grubs (available from U.S. Government Printing Office, Washington, D.C. 20402).

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