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G93-1139 Using the Dairy Herd Analyzer Program To Troubleshoot Management Problems

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Using the Dairy Herd Analyzer Program To Troubleshoot Management Problems

Here's a logical approach to solving your herd's reproductive, nutritional, genetic and milk quality problems using the Dairy Herd Analyzer program.

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- Summary

The Dairy Herd Analyzer program was developed at Kansas State University. The program uses information on the DHIA-202 form to aid a producer in identifying areas that need to be addressed to improve productivity and overall herd management. The analysis specifically targets four management areas: reproduction, milk quality, nutrition and genetics.

A copy of the input data taken from the DHI-202 form is presented in *Table I*. All of this information except for the somatic cell count (SCC) and the milk plant premiums for milk quality are on the DHI-202 form. You can enter the DHI somatic cell count or your bulk tank test from your milk plant (Item 19, *Table I*). Items 20 and 21 reflect the maximum premium that your milk plant pays and the actual amount that you receive for your milk. The data that you list in *Table I* is then entered into the Dairy Herd Analyzer program and the resulting printout is generated as presented in *Table II*.

In order to have your herd analyzed on the Dairy Herd Analyzer -- **free of charge** -- simply fill out the information in *Table I* and send it to either: Extension Dairy Specialist, Department of Animal Science, University of Nebraska, Lincoln, NE 68583-0908 or Manager, Nebraska DHIA, P.O. Box 663, Beatrice, NE 68310-0663.

The four management areas highlighted in the report, as shown in *Table II*, are: reproduction, nutrition, milk quality and genetics.

Table I. Information needed to complete Dairy Herd Analyzer

1. Date _____	Name: _____
2. Herd code	_____
3. Rolling 365 day milk average	_____
4. Rolling 365 day fat average	_____
5. Number of producing females on farm	_____
6. Days minimum freshening interval	_____
7. Average days dry	_____
8. Average services per conception producing females	_____
9. Number pregnant cows bred once (DHIA 202)	_____
10. Number of pregnant cows bred twice	_____
11. Number pregnant cows	_____
12. Number cows with breeding intervals 18 to 24 days	_____
13. Number PG cows with breeding intervals < 18 days	_____
14. Number of PG cows with breeding intervals > 24 days	_____
15. Number of females - lactation 1	_____
16. Average age lactation 1 (months)	_____
17. Milk price per CWT	_____
18. Feed cost per CWT of milk produced	_____
19. Somatic cell count - actual or linear score	_____
20. Dairy's maximum premium for quality milk	_____
21. Amount premium you receive (minus if deduct)	_____
22. Number of producing females with PTA$ proven sires	_____
23. Average sire PTA$ of producing cows with PTA$	_____
24. Number of producing cows without PTA$	_____
25. Breed predicted dollar value (enter code for breed)	_____
1. Ayshire 2. Brown Swiss 3. Guernsey	4. Holstein 5. Jersey 6. Mixed

Reproduction

Item A.1. in *Table II* lists the amount of income your herd could generate if the calving interval (C.I.) is near 365 days. Research has shown that a producer loses $1 per head daily for each day the C.I. is between 365 and 395 days and $3 per day thereafter.

Table II. Output form from Dairy Herd Analyzer

A. Reproduction		
1. $1/day over 365 days up to 395 days, then $3/day over 395 day calving interval		$_____
2. $3/day over 60 days or below 45 day average dry period		$_____
3. $2/each 0.1 service/conception over 1.7		$_____
4. $30/month/animal for each month over 24 months of age at first freshening		$_____
Reproductive loss per cow	$_____	
Reproductive loss per herd	$_____	
Conception % -- first service	_____%	
Conception % after 2nd service	_____%	
Heat detection efficiency (%)	_____%	
B. Nutrition		
Nutritional loss per cow	$_____	
Nutritional loss for herd	$_____	
C. Milk Quality		
1. Price milk/lb. x est. SCC milk loss x cows	$_____	
2. Cows x lbs. milk x milk quality premium	$_____	
Milk Quality loss for herd	$_____	
D. Genetics		
1. Breed average x 35% - cows sire average/2		$_____
2. Cows without PTA$ sires x 35% breed avg PTA$	$_____	
Genetic loss per herd	$_____	

Reproduction $ _____	Nutrition $ _____
Milk Quality $ _____	Genetics $ _____
Potential improvement per cow _____	
Potential improvement for herd _____	

Item A.2. shows that the dry period can also play a major role in reducing profits. As shown under A.2., an excessively short or long dry period can cost money. Every day that the average dry period extends beyond 60 days is another day the cattle are not in the milking string. This also is a time when your cattle can put on excessive weight, increasing the incidence of metabolic problems at calving. A short dry period (45 days or less) also creates problems, as the cow may not have adequate time to prepare for the next freshening period.

Item A.3. refers to the recommended number of services per conception being 1.7. Anything over this figure is estimated to cost a producer $2 for each one-tenth of an increase in the number of services beyond 1.7. This figure does not take into account the increase in semen costs, which in all cases is considerably higher than $2.

Not freshening your heifers at 24 months of age is the most costly reproductive problem in Nebraska (Item A.4.). The extra labor and feed costs needed to keep an animal each month over the 24 month optimum is $30 per month. If you have an average age at first freshening of 28 months and you freshen 30 heifers per year, your losses are (28 - 24) ' 30 ' $30 = $3,600. Your nutrition program for raising heifers must start early and be monitored routinely to be certain your heifers are growing properly, and your vaccination, heat detection and breeding skills must be up-to-date. For more information refer to NebGuides G89-952, *Estrus (Heat) Detection Guidelines* and G86-822, *How to Estimate a Dairy Herd's Reproductive Losses*.

The five figures presented in *Table II* (section A.4.) give you the total dollar loss for your herd in the reproductive area per cow and overall herd basis. Additional calculations show conception percentage on the first, and after the second, service. Your heat detection percentage is also given in this section. To compare your results with the recommended target figures, please refer to NebGuide G86-822, *How to Estimate a Dairy Herd's Reproductive Losses*.

Nutrition

The Dairy Herd Analyzer cannot give a very accurate and detailed analysis of your nutrition program given the limited input from your DHI-202. If the figure presented in section B (*Table II*) seems excessive to you, you should get in touch with your Extension Specialist, veterinarian or feed consultant to analyze the feed inputs and look at ration costs. The following section focuses on some of the most common problems in feed management.

Feed costs make up 50 to 60 percent of the variable cost of milk production. Obviously, feed costs have a tremendous impact on profitability of a dairy enterprise. Feeding management also affects traits associated with production efficiency such as body condition, reproductive performance, incidence of metabolic disorders and herd health. Proper feeding alone, however, will not compensate completely for environmental, housing, handling or milking system limitations. To diagnose feeding-related problems, critique your management practices; evaluate body condition and herd health, feedstuff quality and facilities. A problem in any of these areas will contribute to poor herd performance. Effective troubleshooting requires knowledge and expertise in dairy management, careful observation skills and a thorough, detailed examination of your farm situation.

The Problem: Actual Performance Less Than Expected. A properly formulated ration has a milk production potential which is based on adequate total feed intake. Therefore, in order for actual production to equal expected production, the ration must be formulated to meet or slightly exceed requirements for protein, energy, fiber, minerals and vitamins. Often, it is necessary to work with a trained nutritionist to develop a properly balanced diet.

Throughout the troubleshooting process, you should consult with your nutritionist, veterinarian, extension agent, DHIA supervisor, fieldman and others who can help you solve your feeding problems. Besides low production, common problems include low milk fat or protein, excessive herd health problems or high feed costs relative to production.

Importance of Feed Intake. If the ration has been carefully formulated on paper, but milk production is still lower than expected, check feed intake level. Feed intake controls milk production. Simply stated,

unless a cow has unlimited access to a balanced ration, she cannot maximize production and remain healthy. Factors controlling intake include: the ration, cow size and the environment. Important environmental aspects include feeding facilities, water availability, temperature and humidity, and feeding sequence. Cows in early lactation should consume 3.5 percent or more of their bodyweight daily in dry matter. In middle or late lactation, dry matter intake drops to 2.8 to 3.0 percent. The dry cow should consume only 1.75 to 2.0 percent of her bodyweight daily as dry matter. This is often a problem because a 2 percent level of intake provides excessive nutrients unless the ration is carefully balanced for dry cow nutrient requirements.

Lactating dairy cows require at least 2 feet of bunk space per cow. For high production groups, one-half to two-thirds of the cows should be able to eat at one time. Cows must be able to move freely to and from a feeding facility. Excessive mud, manure, water, ice or debris will impede movement. Remember, the goal is to entice an essentially full cow to return to the bunk to eat a few more pounds of feed!

Because milk is 87 percent water, you also need a sufficient number of waterers (usually 20 cows per waterer). Water needs to be within 50 feet of the feeding area, and also at entry ways to the milking parlor, freestall, or loafing area. A marginal limitation in water intake will decrease dry matter intake by 1 to 2 pounds daily, which could limit peak milk production by 2 to 5 pounds. Keep in mind that a 1 pound increase in peak milk yield translates into a 200 pound increase in milk production over the complete lactation. Information on ways to maximize intake can be found in NebGuide G90-1003, *Maximizing Feed Intake for Maximum Milk Production.*

Evaluate Forage and Feeding Management. Crops, especially forages, should be managed with the same intensity as the lactating herd. Following are guidelines to help solve, or hopefully avoid altogether, poor performance related to low quality or insufficient forage.

1. Determine tonnage of forage needed for each group of cows.
2. Inventory all fields as to their acreage and productive capacity.
3. Take a soil sample of every field each year.
4. Weigh forage to determine yield per acre.
5. Analyze forages and grains prior to storage.
6. Define and inventory forages as they are stored.
7. Evaluate storage systems for their ability to isolate and store forages adequately for subsequent feedout to specific groups of animals.

In short, maintain and analyze your forage records as intensively as your DHIA or other milk production records.

Are Cows Grouped Properly? Group cattle to maximize efficiency of production. Cattle perform at higher levels if they are free of stress related to improper grouping or housing. Cows should be grouped and housed in a way that limits time spent in holding areas to no more than three hours daily. Try to separate first calf heifers from mature cows, if at all possible, due to their smaller frame size, higher growth requirements and higher persistency of lactation.

Troubleshooting Checklist. *Table III* summarizes some of the most important things to consider in troubleshooting feeding-related problems. In addition, you might examine the following cattle, feed and environmental factors:

1. feet and leg problems that might limit mobility
2. rumination (cud chewing) activity -- ideally, more than half the herd should be eating or ruminating at any one time

3. manure consistency, color and content
4. haircoat appearance and cleanliness
5. respiration -- check for coughing or nasal discharge
6. physical condition of forages -- should be of adequate particle size and free of weeds, mold and putrefaction
7. animal handling -- considerate and gentle

Table III. Questions to consider when troubleshooting a feeding program

Consideration	**Recommendation**
1. How many times per day is grain fed?	4 or more times
2. How many pounds of grain per meal?	5 to 7 pounds maximum
3. How often is a total mixed ration fed?	2 minimum
4. What is dry matter intake per cow?	2.5 to 3.0 percent (low production) 3.5 to 4.0 percent (high production)
5. What is ration moisture?	15 to 50% moisture
6. How much bunk space per cow?	2 to 2.5 feet
7. How many cows per waterer?	20 or less
8. Is feed available 18 to 20 hours daily?	yes
9. Does feed build up in mangers/bunks?	no
10. Are minerals force fed?	2 to 4 ounces per cow daily
11. How fine are silages chopped?	15 percent or more of particles are over 2 inches long
12. How coarse is grain mix?	avoid fine grinding
13. How many pounds of milk produced per pound of grain dry matter?	2.5 to 3.5
14. How much forage is consumed per day?	1.8 to 2.5 percent of bodyweight
15. How often are rations balanced?	4 times yearly minimum
16. How often is forage tested?	test each lot of forage
17. What are incidences of metabolic disorders in your herd?	milk fever (<6%), ketosis (<2%), displaced abomasum (<5%), udder edema (<5 to 10%), off-feed (0%), low fat test (<5%), retained placenta (<8%)
18. What is body condition score at dry-off?	3.5 to 4.0
19. Are your lactating cows in proper body condition?	<5 to 10 percent at 1.5 to 2.0 <5 to 10 percent at 5.0
20. Do you accurately weigh cows?	yes, or use weight tape
21. Are dry cows fed separately from milking herd?	yes
22. Are cows properly housed?	yes; see MWPS-7

Adapted from: R.L. Orth. 1987. Iowa State University. Cooperative Extension Service, Ames, Iowa.

Milk Quality

The section on milk quality calculates the amount of income under item C.1. (*Table II*) that you could gain if your SCC was near 100,000 and your production increased due to the lowering of SCC. The figure for C.1. will give an indication of the income you could generate strictly from the sale of increased milk. Item C.2. lists the additional income you would generate by being paid the top plant premium for the milk produced. This figure may shock producers, but with the increase in premiums for quality and the lowering of SCC from one million to 750,000 on July 1, 1993, one should look closely at this figure. By lowering the SCC in the milk, you will not only generate substantial income, but also increase the quality of the milk to the consumer.

Genetics

This section gives the increase in income you can expect by increasing the average genetic value of the Artificial Insemination (A.I.) sires selected. Take a look at the sires you are selecting and then look at the Active A.I. sire listing. Are you near the top or bottom? If you are not using sires in the 80th percentile, or higher, then you should increase your sire selection standards.

Summary

The last information on *Table II* gives an overall summary of your herd's potential increase in profit. Pick out one area that you feel can be improved and work on it to increase profits. Refer to the specific NebGuides listed or call your Extension Specialist for additional help.

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