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## How to Interpret D.H.I.A. Records

C. W. Nibler

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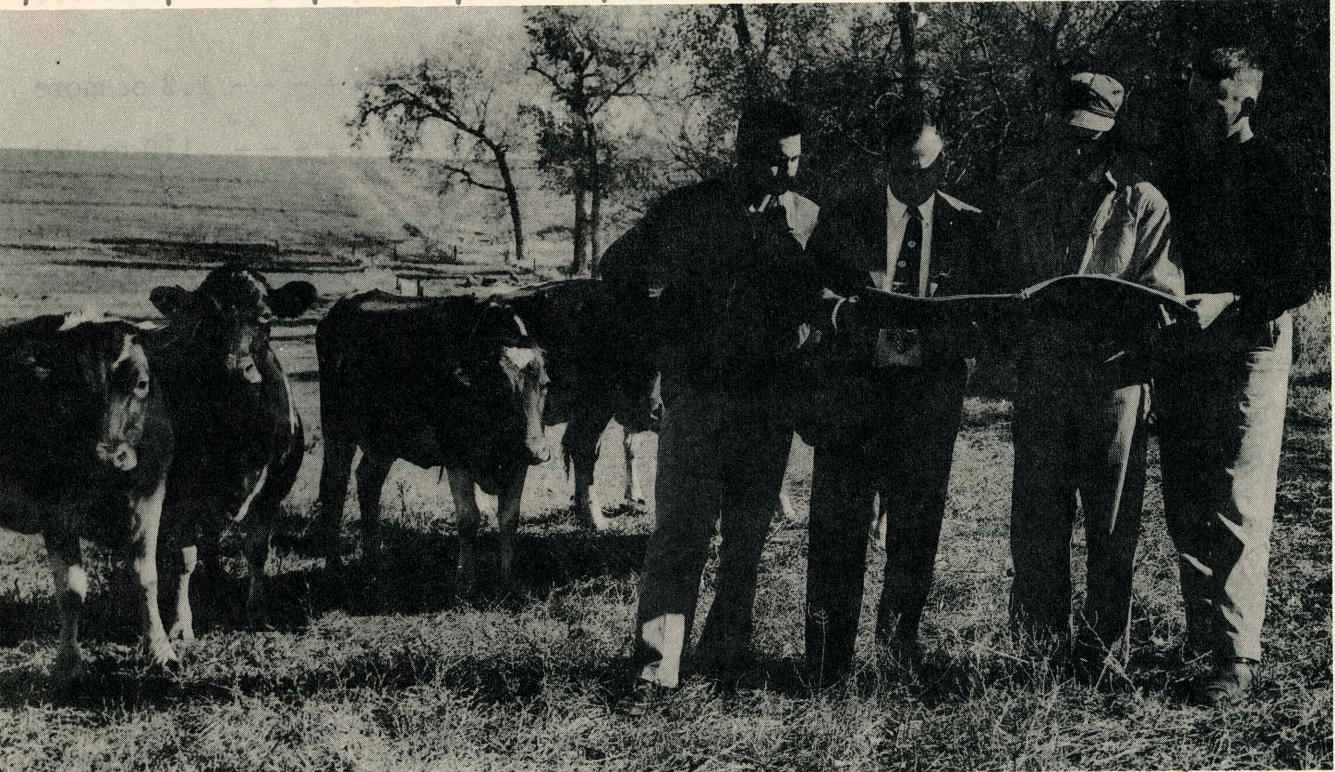
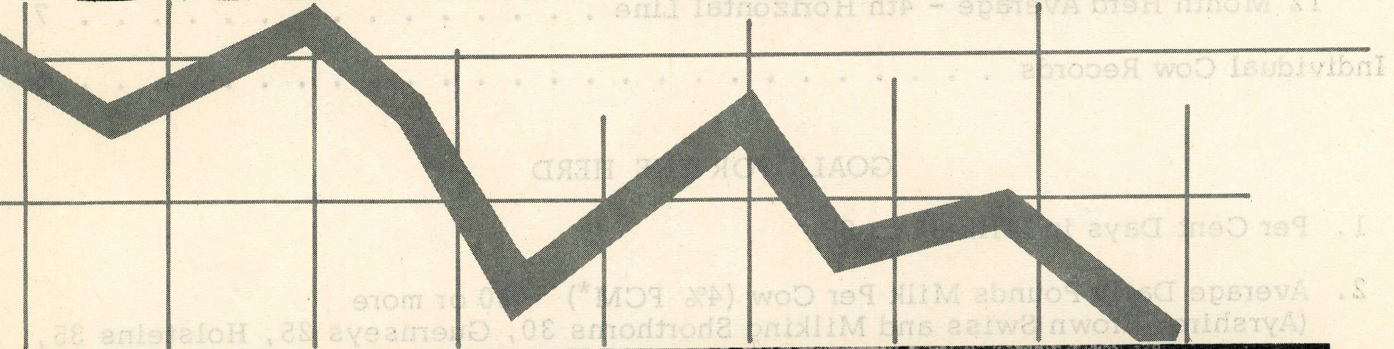
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HOW TO INTERPRET

# D.H.I.A. Records



EC 615

PUBLISHED AND DISTRIBUTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914, BY THE COOPERATIVE EXTENSION SERVICE OF THE SOUTH DAKOTA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, BROOKINGS, JOHN T. STONE, DIRECTOR, U. S. DEPARTMENT OF AGRICULTURE COOPERATING.

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GOALS FOR THE HERD

1. Per Cent Days in Milk 84 to 88
2. Average Daily Pounds Milk Per Cow (4% FCM\*) - 30 or more  
(Ayrshire, Brown Swiss and Milking Shorthorns 30, Guernseys 25, Holsteins 35, Jerseys 25)
3. Average Daily Pounds B. F. Per Cow - - - - - 1.2 or more
4. Feed Index - - - - - 110 to 120
5. Rate of Roughage Feeding - About 2.5
6. Income Above Feed Cost - - - - - At least 10% greater than feed cost
7. Feed Cost Per 100 Lbs. Milk - - - - - Less than 1/2 value 100 lbs. milk
8. Total Milk Produced Per Worker - - - - - 300,000 lbs. or more
9. Return Above Feed Cost Per Worker - - - - - \$8,000 or more
10. Pounds Concentrates Fed - - - - - in line with lbs. indicated on D.H.I.A. 200
11. Age at Calving (first calf heifers) 24 to 28 months
12. Number of dry days - - - - - 45 to 60 Days
13. Pounds milk produced first 305 days - - - - - Ten Times Body Weight
14. Date Bred After Calving (in milk column) 60 to 90 Days
15. Date turned Dry following Pregnancy (carried calf column) 220 to 240 Days

\* This formula for computing 4% F.C.M. is (.4x lbs. of milk) + 15x lbs. of fat.

0, K

# Explanation and Use of Information On Monthly Herd Reports (DHIA-200)

By C. W. Nibler  
Professor of Dairy Husbandry (Agricultural Extension)

Information below explains what is printed on the Monthly Herd Report, DHIA 200, that dairymen receive from the Dairy Record Processing Center at Iowa State University. The explanation is divided into three parts: (1) Information at the top of the first sheet; (2) Information in the summary at the bottom of the last sheet; (3) Information about individual cows.

### Top of First Sheet

Code Numbers - Examples, 47-02-0031; 41-32-7002; 43-15-9072.

The first two numbers are for the state. Nebraska is 47. Numbers for other states include: Minnesota 41, Iowa 42, Missouri 43, North Dakota 45, South Dakota 46, Kansas 48, Arkansas 71, and Oklahoma 73.

The second two numbers represent an association or county - 02 for Antelope or 32 for Madison.

The third group is the herd number. There are three possibilities. A number starting with zero, like 0031, is a standard monthly or bi-monthly DHIA herd; one starting with a seven like 7002, is an owner-sampler herd, and one like 9072 is a herd enrolled in the DHIR or Dairy Herd Improvement Registry program.

25
----

Centering Date - This is the day which is the center of the testing period for the dairyman's herd. For example, 25 is the center of the testing period from January 10 to February 9.

1	27
---	----

Date Tested - This is the day the herd was tested. Test day is the date of second milking (morning). If samples are taken the evening of January 26 and the morning of January 27, test date is the 27 as shown in example.

1	29	2	2
---	----	---	---

Date Received and Mailed From Processing Center - These two dates show when the pre-listed barn sheet DHIA 201 was received at the Iowa Processing Center and when the completed record DHIA 200 was mailed to the owner.

From	To
1   10	2   9

Test Period - This is the inclusive period for which the production is calculated. A period from January 10 to February 9 means that all herd and individual production credits and feed amounts are for this period.

### Bottom of Last Page

Information about the herd is summarized at the bottom of the last page on four horizontal lines. This information is based on totals for the current testing period, average daily production, total production for a period of 1 to 12 months (only for the last 12 months when on test for 12 or more months) and an average for the herd based on 12 months. The explanations are from left to right on the DHIA 200 form and are best understood when read from left to right. The four divisions of the herd summary are discussed in the order they appear.

Herd Totals This Month - 1st Horizontal Line

Cow-Days
1196

Cow Days on Test - This is the number of cows in the herd - milking and dry - times the number of days in the testing period, plus or minus days for first calf heifers and for cows purchased, sold or that died. Example - 38 cows x 31 days, plus 18 days credit for first calf heifers equals 1196 cow days. Cows reported fresh without milk weights will have their days on test included the next month.

Cow-Days
1170

Cow Days in Milk - This is the number of days in milk for all cows in the herd. It is the total of individual Days in Milk for different cows in the Current Test Period.

CWT
525

Milk Cwt. - After adding two zeroes, this is the total pounds of milk produced by the herd for the current testing period. For example, this herd produced 52,500 pounds of milk from January 10 to February 9.

Pounds
1800

Fat - This is the total pounds of butterfat produced by the herd for the current testing period.

Pounds
15420

Concentrates Consumed - This is the total pounds of grain or concentrates consumed by the herd for the current testing period.

10 lbs.	10 lbs.
5980	1794

Succulents and Dry Roughage Consumed - After adding a zero, this is the total pounds of succulent roughage (silage-green chop) and dry roughage (hay) consumed by the herd for the current testing period. For example, the amount of silage consumed was 59,800 pounds or 29.9 tons.

Pasture Days - This is the number of cow days on pasture for the current testing period.

\$10
202

Value of Product - After adding a zero, this is the total value in dollars of milk or cream for the current testing period. For example, the value of milk was \$2,020 from January 10 to February 9.

\$10
35

Cost of Concentrates - After adding a zero, this is the total value of the grain mixture fed the cows during the current testing period. For example, for this herd it was \$350, or the cows marketed \$350 worth of grain.

\$10
70

Feed Cost - After adding a zero, this is the total value of all feed (grain, roughage, and pasture) fed the cows during the current testing period. This is \$700 worth of feed fed or marketed by the cows.

\$10
132

Income Over Feed Cost - After adding a zero, this is the figure secured by subtracting feed cost from total value of product. For this herd, for the testing period, it was \$1,320.

Man Days - Example: 46. This is the total man days (one man day equals ten hours) devoted to taking care of herd for the current testing period.

Total Pounds Concentrates Indicated - Based on the net energy in the roughages and the production and the body weight of each cow in the herd, this is an indication of the grain needed for the entire herd. This figure should be compared with the figure in pounds of concentrates consumed to see how closely they check or balance.

Solids Not Fat - No figures are recorded in these places but if DHIA members have their herd tested for SNF, they will be placed in the proper columns. The SNF will include the protein, lactose and mineral in the milk.

Daily Average Per Cow This Month - 2nd Horizontal Line

Cow-Months
39

Number Cows - This represents the total number of cows in the herd for the testing period. The number is determined by cow days in the herd divided by the number of days in the testing period and rounded to the nearest whole number. Example, 1196 divided by 31 equals 38.58 rounded to 39. For example, two heifers freshening for the first time, each having 45 days credit in the herd, would be calculated as 3 cows.

Percent Days in Milk - 93%. This represents the percent of the herd in milk for the testing period. Some months it may exceed 100 percent if all cows are in production and one or more heifers freshen with more days in production than there are days in the testing period. The cow days in milk, divided by cow days on test, multiplied by 100 equals percent herd in milk. The difference between the published figures and 100 represents the percent of the herd dry during the testing period.

Pounds
43   9

Milk Pounds - This is the average daily milk production. Here it is 43.9 pounds for the testing period for all cows in the herd, including dry cows. The line between the 3 and 9 is the decimal point.

% Test - 3.4 - This is the average test of the herd for the testing period.

Fat Pounds - 1.5 - This is the average daily butterfat production, 1.5 pounds for the testing period for all cows in the herd.

Lbs.	%NE
13	43

Concentrates Consumed - This represents the average pounds of the grain mixture consumed daily and the percent of net energy secured from the grain or concentrate mixture. Dried sugar beet pulp is included as part of the grain mixture.

Lbs.	%NE
50	32

Succulents Consumed - This is the average pounds of silage, green chop, or similar type of roughage eaten daily and the percent of net energy secured from these feeds.

Lbs.	%NE
15	25

Dry Roughage Consumed - This is the average pounds of hay or similar feed consumed daily and the percent of net energy secured from these feeds.

Pasture - In this space is listed only the percent of net energy secured from pasture during the pasture season.

Feeding Index - Example: 112. This represents the feed consumed as related to requirements of the herd based on body maintenance (body weight is used), milk production, and test. The "Feeding Index" is a percentage value showing the relationship of theoretical requirements of the cows to the actual amounts consumed. It is calcu-

lated by dividing total net energy consumed (all sources) by the amount of net energy required for maintenance and production. For the herd a Feeding Index of 110 to 120 is needed to allow extra feed for growth of young cows, for reproduction and for the conditioning of thin cows. Although a feeding index of about 120 may be good on the basis of herd averages, some individually high-producing cows may be underfed and low-producing cows overfed. Because of this, the amount of concentrates indicated for each individual cow should be carefully studied.

Rate of Roughage Feeding - Example: 2.7. This is the pounds of good hay equivalent fed per 100 pounds liveweight. For example, silage is first converted to a dry roughage basis. (45 pounds divided by 3 equals 15. The figure to divide by will vary with moisture content and quality code of succulent feed.) To the 15 is added the dry roughage or hay fed daily, such as 20, which is also adjusted to a good hay equivalent. The total of 35 is then divided by the average weight of the herd (1300 or 13) and the result is 2.7. Pasture is also converted to a good hay equivalent. If maximum roughage is fed and all feed and weight figures are accurately reported on what is actually consumed, the figure should be between 2.3 and 3.0. With limited roughage and heavier grain feeding the figure may be less than 2.3.

Value of Product - Example: \$1.32. This represents the average value of milk for the average cow, for one day.

Cost of Concentrates - Example: \$.29. This represents the value of the grain mixture consumed by the average cow for one day.

Feed Cost - Example: \$.58. This is the value of the feed cost (grain plus roughage plus pasture) consumed by the average cow for one day.

Income Over Feed Cost - Example: \$.84. This is the value of product minus feed cost for the average cow for one day.

Feed Cost Per Cwt. Milk - Example: \$1.32. This is the feed cost for producing 100 pounds of milk for the current testing period.

Milk Price - % Fat - Example: \$3.90 - 3.5%. This is the base price of milk as reported by the supervisor for the current testing period. This base price, with consideration given to the butterfat differential, is used in calculating the value of product for each cow.

## 12 Month Herd Totals - 3rd Horizontal Line

The figures on this line represent the total production for the herd. Totals are from the time the herd was enrolled into this system to the present time, or if the herd has been enrolled more than one year figures are for the last 12 months.

Cows Days - This is the total number of cows in the herd, times the number of days in the year, plus or minus the days for first calf heifers and for cows purchased or sold or that have died during the year. Example: 43 cows times 365 equals 15,695 cow days. The herd needs to be enrolled in the system for 12 months to show an appropriate cumulative 12 months total.

Cow Days in Milk - This is the total number of days cows have been in milk for the year.

Milk Cwt. - Example: 5415. After adding two zeroes, this is the total milk produced by the herd in the months covered by the report. In this case, it is 12 months. It never exceeds 12 months production. For example 5415 is 541,500 pounds milk produced by the herd in the last 12 months.



Fat 10 lb. - Example: 1899. After adding a zero, this is the total butterfat produced by the herd in the months covered by the report, or 18,990 pounds butterfat in the last 12 months.

Concentrates Consumed - Example: 1873. After adding two zeroes this is the total amount of grain or concentrates consumed by the herd during the months covered by the report. The total is accumulative until 12 months is reached and then always represents the total for the last 12 months.

Succulents Consumed - Example: tons 111. This is the tons of silage or similar high moisture feed consumed in the last 1 to 12 months.

Dry Roughage Consumed - Example: tons 125. This is the tons of hay or similar low moisture feed consumed in the last 1 to 12 months.

\$10
2115

Value of Product - After adding a zero this is the total value of milk produced by the herd for 1 to 12 months, after 12 months, it is the last years total.

\$10
445

Cost of Concentrates - After adding a zero this is the total value of grain consumed by the herd in the last 1 to 12 months.

\$10
738

Feed Cost - After adding a zero this is the total value of feed consumed by the cows for 1 to 12 months. To secure the value of roughage fed, subtract cost of concentrates from total feed cost.

\$10
1377

Income Over Feed Cost - After adding a zero this is the figure secured when total feed cost is subtracted from total value of product. This income over feed cost is a total for the herd for 1 to 12 months.

### 12 Month Herd Average - 4th Horizontal Line

Figures that appear in these spaces from left to right are averages for the herd based on twelve months. When the herd has been enrolled in this system less than one year the yearly total cow days are always divided by 365 to obtain cow years, which is then divided into other items to show rate of production or feed consumption and costs on a yearly per cow basis. For example, a herd of 24 cows tested only one month will show an average of 2.0 cows, for two months an average of 4.0 cows etc. The explanation of the figures are:

X - means the herd has been enrolled in the system 12 months or less. The X disappears after 12 months or one year.

Cow Years - Example: 42.2. After 12 months this figure represents average number of cows in herd for the past year (or always for the last 12 months). The figure is secured by dividing 365, or the number of days in the year, into total cow days. Herds enrolled in the system less than one year will have yearly herd average computed on basis of a partial year. For example, a herd in the system only 3 months will have the 12 months average computed on the basis of 3 months production and costs.

% Days in Milk - Example: 86%. This is the percent of the herd that has been in production for a period of 1 to 12 months or for a year. For a well managed herd this should be about 87 percent for the year.

Milk Pounds - Example: 12,832. This is the average annual pounds of milk produced by each cow in the herd.

% Butterfat - Example: 3.5. This is the average annual test of the herd.

Fat Pounds - Example: 450. This is the average annual pounds of butterfat produced by each cow in the herd.

CWT	%NE	CWT	%NE	CWT	%NE
44	43	53	9	60	29

Concentrates, Succulents and Dry Roughages Consumed and % NE - After adding two zeroes this is the average annual pounds of feed reported consumed by each cow. Beside each feed weight is the percentage of net energy secured from that feed. For example, 4,400 pounds of grain furnished 43 percent of the net energy, 5,300 pounds of succulent roughage furnished 9 percent of the net energy and 6,000 pounds of dry roughage furnished 29 percent of the net energy.

Pasture No. Days % Net Energy - Example: 159 - 19. This is the average number of days the herd received feed from pasture and the percent of the net energy they secured from pasture.

Average Body Cwt. - This is the average body weight for the herd. The weight is expressed to the nearest hundredweight - 14 means 1400 pounds.

Value of Product, Cost of Concentrates, Feed Cost and Income Over Feed Cost - These figures on the fourth line all represent the average cow in the herd. For example, \$501 is the value of product for one cow for the year, \$105 is the value of grain consumed, \$175 is the total value of feed consumed and \$326 the income over feed cost.

Feed Cost Per Cwt. of Milk is self explanatory.

Number of Workers - Example: 1.2. This is based on one ten-hour working day, which would be shown as 1.0. The figure 1.2 means an average of 12 hours. This figure needs to be related back to cow years. For example 1.2 workers for 42.2 cow years means 12 hours a day is devoted to taking care of 42.2 cows.

1000 Lbs. of Milk Per Worker - Example: 375. After adding three zeroes this represents the rate at which milk is being produced by one worker annually on a ten-hour day basis. For example 375,000 pounds of milk per worker was produced in a year.

\$100 Return Above Feed Cost Per Worker - After adding two zeroes this represents the rate of return above feed costs for one worker annually on a ten-hour day basis.

### Individual Cow Records

Most of the information about the individual cows is self explanatory. However, a few items are especially important. Therefore, the remainder of the information deals with three items: Concentrates Fed and Indicated, Days Dry and Carried Calf, and 305 Day and Total Lactation Records.

Concentrates: Lbs. Fed and Lbs. Indicated - Example: 7-9. The information in these two columns can be very helpful in adjusting the amount of grain fed to different cows in the herd. The pounds of grain fed is what the supervisor reported as being fed to each cow on test day. The pounds of grain indicated is based upon what is needed for (1) the amount of milk produced on test day at the average test for the lactation-to-date through current month, and (2) body maintenance at the weight provided for each cow. On the basis of roughage and concentrates reported, the amount of grain indicated

for each individual cow is calculated, assuming each cow to be receiving roughages in proportion to her own body weight.

Below is an example for a 1300-pound mature cow producing 40 pounds milk with a lactation to date butterfat test of 3.5 percent.

	Therms
Net energy needed for body maintenance	7.7
Net energy needed for milk production	13.2
TOTAL	20.9

Roughage consumed was 40 pounds of corn silage and 15 pounds of average quality alfalfa hay for a herd averaging 1,300 pounds. These roughages furnish about 12.2 therms of net energy. Therefore, the difference between what is furnished by the roughages and what is required is indicated in the column for grain.

All concentrates are figured with a constant net energy value of 74 therms per cwt. Therefore, 12 pounds of grain would furnish 8.9 therms of net energy and when combined with the roughage would equal 21.1, which is slightly above the maintenance and production requirements. In addition to body maintenance and production, feed is needed for reproduction, particularly during the 7th through 9th months of the gestation period. Reproduction needs are considered in the feeding indications for dry cows, but not for cows in milk. Young cows also need extra grain for growth. The amount of additional grain for growth and reproduction is suggested below.

The amount of grain indicated is a good guide for dairymen. However, sound judgment and knowledge gained from experience must be used. The skillful feeder will also consider body conditions, individual variations in appetite for roughage, stage of lactation, health of cows and price ratio of grain to milk.

A situation where "Fed" and "Indicated" should be equal. When correct information is reported, mature cows, in good condition should be fed according to recommendations.

Situations requiring more concentrates than "Indicated."

Even though correct data have been reported, certain conditions call for additional concentrates:

- a. Any cow, milking or dry, in thin condition.
- b. Gradual increase in "Concentrates Fed" to the individual cow, beginning several days before calving will prepare the cow for maximum production after calving.
- c. A normal cow should increase in production following calving. Therefore, sometimes the recommendation in the grain indicated column may lag behind production so one needs to think about feeding for anticipated milk production. Feeding according to present production may lag behind a gradual increase in the lactation curve.
- d. During last 3 months of pregnancy, while still in milk, the "Pounds Indicated" does not include allowance for fetal development. Feed five to six additional pounds of grain.
- e. First-calf heifers require two to three pounds more concentrates daily above amount "Indicated" to meet growth requirements.
- f. Second-calf heifers require one to two pounds of concentrates daily above pounds "Indicated" to meet growth requirements.

g. When milk production is dropping off too rapidly it may indicate a need for more concentrates.

h. When cows are not actually eating as much forage according to body weight as recorded for the average animals in the herd.

i. When forage quality or dry matter was overestimated.

Situation where less concentrates than "Indicated" may be desirable.

a. Cows becoming too fat.

b. Drying off cows which have unusual persistency.

c. When a cow is off feed, sick etc., and refuses to eat.

d. When a cow is to be dry more than 90 days.

Days Dry - Example: 61. For cows in milk, this is the number of days in their dry period prior to their last calving. For cows in milk, the number will remain the same until the cow is reported dry, then it will start with zero and accumulate from the dry date until freshening. For dry cows it is the number of days dry in the current dry period. First-calf heifers will not have any dry days prior to their first lactation.

Days Carried Calf - Example: 186. Information in this column is the number of days since cow was last reported bred to end of current testing period.

In Milk - Example: 305 14,260 3.6 512  
332 14,640 3.6 528. Cows production is listed for the current lactation to date at all times. If cow goes dry before completing 305 day lactation, or finishes a 305 day lactation during a month, production generally appears on two lines, one for the 305 day or less records and the other one for the completed lactation to date.

This example shows in 305 days this cow produced 14,260 pounds of milk and 512 pounds butterfat with a 3.6 test. In addition, so far in this cow's lactation she has milked 332 days and produced 14,640 pounds of milk and 528 pounds butterfat with a 3.6 test. She may still be milking or gone dry after 332 days.

Summary - The real value in records is using them to the maximum. In machine processed records there is much information that can be used as a guide in improving feeding and management of the dairy herd, which in turn increases production per animal and returns above feed costs. By using a systematic plan in analyzing a herd, it should be relatively easy to increase production and profit.

In conclusion, every DHIA supervisor should keep for their members DHIA Forms 1057, Lifetime History of Individual Cow.

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