

NATIONAL DAIRY HERD IMPROVEMENT PROGRAM

UNIFORM OPERATING PROCEDURES

Effective June 28, 2017

CODE OF ETHICS

PURPOSE

This *Code of Ethics* provides guidelines for appropriate conduct in the production, collection, and distribution of DHI information for all individuals and organizations involved with these data.

UNETHICAL PRACTICES

- A. Impairing the reliability of DHI data.
- B. Not cooperating or interfering in the use of the *Uniform Data Collection Procedures* to record DHI data.
- C. Intentionally providing inaccurate data or withholding necessary data resulting in misrepresentation of DHI information.
- D. Engaging in management practices with the intent of misrepresenting the performance of individual animals and/or the herd. Among these practices, but not limited to, are the movement of animals between herds, influencing the relative performance of herd mates, and/or the selective use of management techniques in an effort to bias DHI data. Management practices on test day should be representative of normal practices used on other days.
- E. Permitting the collection of supervised data by a technician with a direct financial or family interest in the herd being tested without notification to and consultation with the field service auditor.
- F. Any practice defined as fraudulent or unethical by the Board of Directors of National DHIA.

REMEDY

Any person, corporation, or other entity violating this *Code of Ethics* may be subject to action by an injured party.

UNIFORM DATA COLLECTION PROCEDURES

PURPOSE

The purpose of these procedures is to provide the framework for a uniform, accurate system that will enhance data reliability.

The uniform records and data thus provided are used for:

- Making farm management decisions
- Genetic evaluation of cows and sires
- Educational programs and research
- The promotion and sale of animals

AUTHORITY

These *Uniform Data Collection Procedures* have been developed and adopted under the direction of National DHIA.

A Cooperative Agreement exists between the United States Department of Agriculture (USDA), Agricultural Research Service (ARS) and the Council on Dairy Cattle Breeding (CDCB) to ensure the flow of DHI data for industry purposes including genetic evaluation programs.

RESPONSIBILITY

DHI service providers, DHI personnel, and dairy herd owners, as well as persons in their employ, are individually and collectively responsible for adherence to these *Uniform Data Collection Procedures*.

These basic and minimum standards are to be uniformly followed throughout the DHI program. They serve to ensure that DHI data will provide the accuracy, uniformity, and integrity essential to all segments of the dairy industry.

All DHI service providers - field service providers, laboratories, meter centers, and dairy records processing centers (DRPC) - must maintain certification by Quality Certification Services to verify compliance with these *Uniform Operating Procedures* and the guidelines for their specific service area.

To participate in the DHI program a dairy producer must agree in writing (membership or service agreement as applicable) to conform to these *Uniform Data Collection Procedures* and *Code of Ethics*.

DEFINITIONS

DAIRY COW is defined as any cow from which milk production is intended for use or sale for human consumption, or which is kept for raising replacement dairy heifers and is an integral part of the dairy herd.

DAIRY HERD is defined according to the following principles that are generally appropriate for herds enrolled in the DHI program:

- All cows of one breed, housed or managed under a single management system, regardless of individual cow ownership
- Farms with two or more distinct breeds may calculate and report either a composite herd average or a separate herd average for each breed

In general, herd codes should be assigned in accordance with the principles stated above. However, it is recognized that legitimate exceptions may exist that warrant assignment of separate herd codes. For example:

- A herd owner may operate separate units under separate management systems, with no movement of cows between these management units.
- If two groups of cows are housed together but with different ownership, management goals, and with no movement of cows from one ownership group to the other; one owner may wish to participate in the DHI program and the other owner may not.
- Farms with two or more distinct breeds may enroll one breed in the DHI program and not the other(s).

DHI Field Service Providers shall only assign herd codes from state/county lists allocated by National DHIA in order to prevent duplication among providers. In so far as possible, herds should be assigned herd codes designating the state/county location where the herd resides.

TEST is defined to be the entire process of information collection at the farm, and may include some or all of the following: weighing of milk during the milking process, electronic collection of milk weights, collection of milk samples, and collection of other data. Since the actual testing of milk samples does not occur at the farm, this procedure should be labeled as the laboratory test.

TEST DAY is defined as the 24-hour period during which data is recorded and milk sampled. Herds recording daily milk yield on the dairy are permitted to use longer intervals (most commonly 5, 7, or 10 days) to estimate 24-hour test-day production if accurately labeled.

DHI TECHNICIAN This and equivalent terms such as supervisor, tester, independent service provider, etc. defines persons approved by the DHI Field Service Provider responsible for data collection that meets the standards described in the Uniform Operating Procedures.

DHI SAMPLE TAKER – This and equivalent terms such as assistants, technicians, helpers, etc. defines persons supervised by and responsible to the DHI Technician, and ultimately to the DHI Field Service Provider, that assist in data collections on farms. DHI Sample Takers should be trained by the DHI Field Service Provider in a

fashion equivalent to the DHI Technician for the job functions they perform such as recording milk weight information and collection of a proper sample.

DHI SERVICE PROVIDERS are quality certified organizations that provide one or more services, including:

- **FIELD SERVICE PROVIDER** is defined as an organization that collects data and/or samples on dairy farms and arranges delivery of DHI reports to the dairy producer.
- **LABORATORY** is defined as a facility that analyzes components and performs animal health diagnostic screening.
- **DAIRY RECORDS PROCESSING CENTER (DRPC)** is defined as an organization that provides electronic processing of DHI data using approved procedures and rules for calculations.
- **METER CENTER** is defined as the entity that repairs and checks calibration of recording devices that weigh and/or sample milk.

DATA COLLECTION PROCEDURES

1. COLLECTION OF MILK WEIGHTS AND SAMPLES

The yield of individual cows is to be measured at the time of milking with a minimum of interference to the normal routine. Milk samples must be representative of all milk taken from the cow during the measured milking. All recording and sampling devices must be used strictly according to the manufacturer's instructions at all times.

Data for each test day for each herd must be labeled using the following categories to identify the degree of supervision used in data recording:

- SUPERVISED TEST:** All test day production data and cow identification has been recorded by the DHI technician who is expected to collect data as accurately as possible and to use approved procedures when taking milk samples. The DHI technician may employ assistants to perform these tasks when the facilities or milking processes do not permit a single DHI technician to observe identification, milk weights, and sample collection as they occur. (*Supervision Code 1*)
- UNSUPERVISED TEST:** Test day production data and/or cow identification has been recorded by someone other than the DHI technician. (*Supervision Code 2*)
- PARTIALLY SUPERVISED TEST:** The DHI technician collected production data and/or cow identification information for at least one milking on test day and someone else collected production information and cow identification for other milking(s) on test day. The DHI technician certifies that the test day information is believed to be correct and accurate. (*Supervision Code 3*)
- AUTOMATIC MILKING SYSTEM TEST:** Test day production data and/or cow identification has been recorded by an automatic/robotic milking system. Milk has been sampled using an automatic sampling device approved to provide representative samples when used with the automatic milking system. (*Supervision Code 4*)
- SUPERVISED ELECTRONIC TEST:** The DHI technician performed a supervised test using the electronic recording of production data and cow identification together with appropriate verification that equipment for cow identification, weighing milk, and obtaining milk samples is in proper operating condition and is accurate. (*Supervision Code 5*)
- UNSUPERVISED ELECTRONIC TEST:** Test day production and cow identification has been collected using electronic recording and is submitted for processing without verification by a DHI technician. (*Supervision Code 6*)
- PARTIALLY SUPERVISED ELECTRONIC TEST:** The DHI technician performed a Supervised Electronic Test, but cow identification was manually entered by farm employees. (*Supervision Code 7*)

2. STANDARD EQUIPMENT

A. DHI FIELD SERVICE PROVIDER OWNED EQUIPMENT

All equipment that is owned, leased, or used by DHI Field Service Providers, including independent service providers receiving their certification from the DHI Field Service Provider, and used for collection of DHI milk weights and/or samples:

- Recording devices, including associated samplers and integrated software programs, must be of a model and type approved by International Committee for Animal Recording (ICAR) and accepted by National DHIA for use in DHI programs.
- Recording devices must be in proper working condition when in use.
- Recording devices must be checked for accuracy at least once a year using an approved method. New and returned-to-service recording devices must be checked for accuracy before being used in the DHI program.
- Portable meters must have a durable label/tag affixed to each device stating the date accuracy was last checked and the meter center that performed the inspection.
- Fixed (in-place) electronic meters/devices must have a record of accuracy verification on file at the dairy and in the office of the DHI Field Service Provider. Checks of device performance and accuracy produced by the milking system software and/or by DHI software may be used to verify the accuracy of these devices as an alternative to device calibration.
- Recording devices (portable and fixed) that are out of tolerance must be removed from DHI service and be repaired and checked for accuracy before returning to DHI service.

B. PRODUCER OWNED EQUIPMENT

The accuracy of all producer owned recording devices and samplers used in the collection of milk weights and/or samples is the joint responsibility of the DHI Field Service Provider and the dairy producer. It is required that DHI dairy producers owning their own equipment follow the same guidelines for verifying meter accuracy as DHI Field Service Providers. The DHI Field Service Provider is responsible for appropriately labeling records from herds using equipment that is not in compliance with the guidelines for DHI owned equipment.

3. RECORDING PROGRAMS

The DHI program offers a variety of supervised and unsupervised test plans to meet the management needs of the individual dairy producers. A list of the type of test codes and plan descriptions is available from the National DHIA office and www.dhia.org. The off-farm use of data from these programs will be determined by the users of the data.

4. METHODS FOR CALCULATING LACTATION RECORDS:

Lactation totals and lactation-to-date totals must be calculated using an ICAR-approved method.

- The *Test Interval Method (TIM)* is currently used to calculate DHI lactation and lactation-to-date totals. The test interval (number of days from the previous test day through the current test day) is divided into two equal portions. Production credits for the first half of the test interval are calculated from the previous test day information, and those for the second half of the test interval are calculated from the current test day information. The totals for the two portions of the test interval are added to obtain the interval totals. Production totals from the first day of the lactation until the first test day are based on the first test day information; and production totals for the interval from the last test day until the record is terminated are based on the last test day information. In either case, an approved regression factor shall be used to accurately estimate actual milk production for the current test day. The next test interval begins on the following day. DRPC are permitted to adjust credits for the test interval based upon average lactation curve effects; provided such adjustments more nearly reflect daily production and have been approved by National DHIA.
- The *Best Prediction Method* is used for prediction of lactation totals from completed test days as a correlated response. *Best Prediction* produces more accurate genetic evaluations and may be used for DHI record calculations.

5. COWS TO BE TESTED

- All dairy cows in the herd with the same herd code, which have ever calved, will be enrolled in DHI. Dairy cows may be removed from DHI only when they leave the herd permanently. Dairy cows used as embryo recipients are to be included.
- Cows classified as *Dry Donor Dams* may be permanently assigned to a separate *Dry Donor String* in the herd or to a separate *Dry Donor Herd*. No data on the *Dry Donor Dam* will be included in herd average or management information. *Dry Donor Dams* that later calve will be returned to the milking herd and a 365-day dry period with zero production

data will be applied against the herd average in the current test interval. For *Dry Donor Dams* that were out of the milking herd for less than 365 days, the dry period will be the actual number of days the *Dry Donor Dam* was out of the herd with zero production data applied for that period.

6. IDENTIFICATION

- A. All cows must be identified with a permanent number for genetic evaluation. Permanent identification consists of an official USDA Animal Identification Number (AIN) ear tag, National Uniform Eartagging System (NUES) tag, or breed association registration number. If the ear tag is not in the ear, the number must be cross-referenced to a picture, sketch, or a brand or tattoo that is unique within that herd.
- B. For a supervised test, the DHI technician must be able to visibly identify the cow quickly and accurately during the milking process. All visible identification must be in place on the cow prior to the beginning of the milking and be visible from several feet or accurately scanned and displayed by an electronic identification reader. Visible identification must be cross-referenced to permanent identification if the data are to be used in genetic evaluations.

7. MILK SHIPPED MEASUREMENTS

Milk shipped weights shall be recorded (data for shipments immediately prior to date of test) indicating the number of milkings (or days) included in each shipment. If the milk shipped weights do not contain a complete day's production, the DHI technician shall report the best estimate of each day's milk shipped. If milk shipped weights are not available, the fact that they cannot be obtained and the reasons why should be reported in writing to the DHI Field Service Provider. Milk shipped weights for appropriate days may be used as verification of the accuracy of production credits of the herd.

8. COWS IN MILK

All cows in milk, when possible, should have milk weighed and/or sampled on the test day. Data will be used for record calculation for cows after the fourth day, counting the day of calving as the first day. The record begins on the calving date.

9. DRY COWS

The dry date is the first calendar day the cow is not milked. Cows coded dry on test day will have their production credits projected forward from the previous test day, using the previous test day production data and approved National DHIA estimation procedures.

10. COWS LEAVING THE HERD

The calendar day the cow leaves the herd counts as the last day in the herd, with production being credited for that day.

11. COWS ENTERING THE HERD

Any lactating cow entering the herd will start receiving production credits in the new herd on the calendar day following the last day of credits in the former herd.

12. COWS THAT ARE SICK, INJURED, IN ESTRUS OR ABNORMAL

Actual production should be recorded on test day for all cows that are sick, injured, in estrus, or otherwise abnormal, and subsequently be coded with a Condition Affecting the Record (CAR). The milk weight will be adjusted by the DRPC for cows so coded if the percentage decrease in total daily pounds of milk from the previous test day exceeds the percentage obtained with the following formula:

$$\text{Percent} = 27.4 \text{ plus } 0.4 \times \text{days in the previous test interval.}$$

(As an example, for a 28-day test interval: $\text{Percent} = 27.4 + (0.4 \times 28) = 38.6\%$, and the test day weight will be adjusted if the decrease is more than 38.6%)

This procedure does not apply to milk weights routinely adjusted at the beginning or end of lactation. If the first test day is coded abnormal the succeeding test day will be used to calculate the record.

13. COWS ABORTING OR CALVING PREMATURELY

A cow beginning her lactation 30 or more days prior to the expected due date, whether in milk or dry, will be coded as starting the subsequent lactation with an abortion. When a breeding date is available, a cow beginning her lactation less than 30 days prior to the expected due date will be considered a normal calving.

If a cow aborts the pregnancy while in milk and has carried a calf less than 152 days, her current record will continue without interruption. If a breeding date is not available, and the cow aborts the pregnancy while in milk for less than 200 days, her current record will continue without interruption. Except for the specific situations above, the current record will end and a new lactation will begin.

14. COWS CALVING WITHOUT GOING DRY

If a cow calves without a dry period, the record will end on the day immediately preceding the calving and the new lactation will begin on the day of calving.

15. PREPARTUM MILK

Prepartum milk will not be counted as part of the lactation and it will not be included in the lifetime production record.

16. COWS MILKED MORE THAN TWICE PER DAY

Herds or cows normally milked more than twice per day will follow the same milking routine on test day.

Lactation records obtained by milking cows more than twice per day for all or part of the lactation will be labeled according to National DHIA procedures.

Herd averages, where some or all of the cows are milked more than two times a day, will be so labeled. The number of times the herd is milked daily will be rounded to the nearest whole number.

17. MISSING MILK WEIGHTS AND/OR SAMPLES

When complete milk weights or samples are not obtained on test day or are lost, the missing data will be estimated by the DRPC for the test period spanned using procedures outlined below. All estimated or missing data will be appropriately labeled. Only actual data will be sent for use in genetic evaluations. Reasons for lost or missed milk weights and/or samples will be recorded by the DHI technician. All adjustments to production credits will be made by the DRPC with routine programming. Exceptional cases should be referred to the DHI Field Service Provider.

A. First Test Day Weights or Samples Missed

- Missing milk weights and component percentages shall be calculated in the succeeding test interval by appropriate factors and procedures approved by National DHIA. Records having first test day more than 90 days after calving are not used in genetic evaluations.
- If the milk sample is missing or cannot be tested by a quality certified laboratory, the percentage of each component for the succeeding test day will be used.

B. Cows Missed For One or More Intervals During the Lactation After the First Interval

- Missing milk weights and component percentages shall be calculated based on the previous milk weights and component percentages using appropriate factors approved by National DHIA.
- The milk weights and component percentages may be held open and later computed as described in the *Test Interval Method*.
- If the sample is missing or cannot be tested by a quality certified laboratory, component data will be estimated according to National DHIA procedures.
- For herds weighed more than once daily and one milk weight is missed, AM/PM factors may be applied to the remaining weight(s) and component analysis to calculate test day yield. This yield shall be considered an actual yield.

C. New Cows Entering The Herd

- A cow purchased in milk with transfer credits will have production credits computed through the sale date in the previous (seller's) herd. The cow's production credits will start the next day in the current (purchaser's) herd, using test day data from the succeeding test. The *Test Interval Method* is required in making these computations. Dry cows will accumulate days on test in the previous (seller's) herd through the sale date and will start on test in the current (purchaser's) herd the next day.
- A cow entering the herd while in milk without previous production credits may have her record computed back to the calving date for management purposes. If the cow has no known calving date as of the first test date, the cow will receive credits for the current test interval only. The DRPC may extend the record back to the fresh date for management purposes only. Only actual data will be used in genetic evaluations.

18. STANDARD CALCULATIONS

- A. *Days Carried Calf* = current sample date - effective breeding date + 1
B. *Days Open* = effective breeding date - previous calving date
C. *Gestation Days* = resulting calving date - effective breeding date
D. *Days Dry* = next calving date - dry date
E. *Calving Interval* = next calving date - current calving date
F. *Days in Milk*
= dry date - previous calving date, or
= left herd date - previous calving date + 1, or
= current test date - previous calving date + 1
G. *Assumptions*
 - The day of calving is an open day, a day in milk, and not a dry day.
 - The day of breeding is a day carried calf.H. *Calculation of Ages of Cows* (Truncation Method)

From the year, month, and day of the calving date, subtract the year, month, and day of the birth date. If the days are positive, discard. If the days are negative, add -1 to months. Then, if months are positive, use years and months as age of the cow. If months are negative, add 12 months, and add -1 to years. Use the resulting years and months as the age of the cow.

I. Adjusting Records to 24 Hours

When milk that is weighed is from an interval other than 24 hours, the recorded weight shall be adjusted to a 24-hour interval using approved AM/PM factors or the following procedure approved by National DHIA when AM/PM factors are not appropriate:

Divide 24 by the interval (measured in hours), then multiply by the total milk recorded during the interval.

Examples:

- For a 25-hour interval, $(24/25) \times 65 \text{ lbs.} = 62.4 \text{ lbs.}$ test day weight
- For a 20-hour interval, $(24/20) \times 65 \text{ lbs.} = 78 \text{ lbs.}$ test day weight
- For a 168 hour (7-day) interval $(24/168) \times 525 \text{ lbs.} = 75 \text{ lbs.}$ test day weight

J. Adjusting Milk Weights to a Verifiable Source

Acceptable adjustment procedures are as follows:

- If the DHI Field Service Provider has verifiable source for both milk shipped and milk not shipped, the test day milk weights are adjusted at the herd level to sum of both milk shipped and milk not shipped.
- If the DHI Field Service Provider has verifiable source for milk shipped but cannot account for milk not shipped, the test day milk weights are adjusted at the herd level to 102.8% of the milk shipped weights.
- In the absence of both milk shipped and milk not shipped, the DHI Field Service Provider shall not adjust the test day milk weights. The normal application of both the 24-hour adjustment and AM/PM adjustment factors by the DRPC shall apply.
- Test day milk weights adjusted at the dairy should not be further adjusted by the DRPC or other entity. The DRPC may recalculate a test day milk weight using the raw milk data if changes in the parameters used in the calculation of the adjusted test milk weight warrant such recalculation.

19. VERIFICATION TESTING

DHI Field Service Providers will conduct verification tests to verify the performance of cows and herds at the request of either a dairy producer member or allied industry representative. DHI verification tests will be performed based on pre-existing terms agreed to among the DHI Field Service Provider, the allied industry representative, and the herd owner. Verification test may be based on situational terms agreed to among all parties. DHI verification tests requested by the dairy producer will include the entire herd.

Acceptable verification procedures are as follows:

- A different DHI technician conducts a duplicate test immediately following the regular test.
- A different DHI technician tests the herd for one milking, in addition to the regular testing schedule.

- A different DHI technician tests the herd using the normal and routine testing schedule (i.e. no additional milkings).

All verification test results will be used in computing credits except under extraordinary circumstances, in which case the DHI Field Service Provider will determine which test(s) will be used.

20. RETESTING AT THE DAIRY PRODUCER'S REQUEST

If a dairy producer is not satisfied with the regular testing of the herd, a retest may be requested. Such a request shall be made within 15 days of the original test day and be directed to the DHI Field Service Provider. The member is responsible for the cost of the retest unless otherwise determined by the DHI Field Service Provider.

Retest results will be used in place of the test day data for which dissatisfaction has been registered when an obvious discrepancy exists. Both tests may be used if no discrepancy exists in the judgment of the DHI Field Service Provider.

21. PRODUCTION REPORTS

DHI lactation records of 305 days or less will be computed as required by National DHIA policies. All DHI records used in genetic evaluations must be processed at a quality certified DRPC. Electronic herd summary reports and cow lactation records will carry record standards variables to describe the conditions under which the records were collected.

22. YEARLY AVERAGES

Herd and Field Service Provider yearly averages will be computed on a cow-year basis. These will be summarized and transmitted as required by National DHIA policies. A herd must have DHI production credits for 365 days before a DHI herd average is published.

23. TRANSFER OF HERD DATA

Herds choosing to transfer service and herd data to a different DHI Field Service Provider are required to sign an intent-to-transfer form provided by the new DHI Field Service Provider.

- A. The current DHI Field Service Provider must approve the transfer of the herd data within 15 days of receipt of the intent-to-transfer form provided the herd is in good financial standing.
- B. The current DRPC subsequently transfers the herd data using current Standard Transfer Formats (STF).
- C. Any cost associated with the transfer is the responsibility of the herd owner requesting the transfer.

24. TRANSFER OF INDIVIDUAL COW DATA

Transfer of individual cow data to new owners shall be accomplished within 10 days of notification from the buyer containing the herd and cow ID of the cow being transferred. This is best accomplished by STF exchange between the DRPC(s) servicing the buyer and seller or by sending a copy of the individual cow page.

25. AUTOMATIC MILKING SYSTEM (ROBOTIC) PROCEDURES

- A. Test day milk weights will be obtained as 24-hour yield obtained from the automatic (robotic) milking system software. The average 24-hour milk yield reported should represent a minimum of three consecutive days and not to exceed ten consecutive days. There will be no application of AM/PM factors on milk yields.
- B. Milk samples shall be obtained using National DHIA accepted sampling devices for one of the milkings during the test day. There will be no application of AM/PM factors on milk component results.
- C. Data obtained from automatic (robotic) milking system software may not be used in genetic evaluations unless the system meets National DHIA/Quality Certification Services standards for on-farm, in-line analyzers.

26. DATA COLLECTION RATING

This index reflects the accuracy of the estimated lactation total. The Data Collection Rating is based on the number of test days, degree of test day supervision, and completeness of data collected on each test day.

