

**DIGAD Data Standard
for Submitting
Static Measurements of
Cattle Liveweight Data
(‘Static Liveweight Data’)**

Contents

- 1 Introduction..... 1
- 2 Scope 1
- 3 Normative References..... 1
- 4 Terms and Definitions 1
- 5 Information About Liveweight Data (Informative)..... 4
 - 5.1 Introduction 4
 - 5.2 Types of liveweight data 4
 - 5.3 Sources of liveweight data 4
 - 5.4 Importance of liveweight data 5
 - 5.5 Factors affecting liveweight measurements 5
 - 5.5.1 Method of collection 5
 - 5.5.2 Weighing times 5
- 6 Requirements for Weighing Systems (Normative)..... 6
 - 6.1 Static liveweight data measurements 6
 - 6.2 Capability and performance of weighing system 6
 - 6.3 Certification of weighing equipment..... 6
 - 6.4 Installation of weighing systems 6
- 7 Standard Operating Procedure (Normative) 7
 - 7.1 Training 7
 - 7.2 Weighing system installation and configuration..... 7
 - 7.3 Consistency of weighing events 7
 - 7.4 Weighing procedure..... 7
 - 7.4.1 Identification of animals..... 7
 - 7.4.2 Zero, or tare, of weighing system..... 7
 - 7.4.3 Ensuring correct weight..... 8
 - 7.5 Accounting for all animals in a herd management group 8
 - 7.5.1 Permitted exemptions..... 8
 - 7.6 Recording animal health factors affecting weight measurement..... 9
 - 7.7 Recording animal movements or termination 9
- 8 Liveweight Data Requirements (Normative) 9
 - 8.1 Introduction 9
 - 8.2 Description of data elements submitted with liveweight data 9
 - 8.2.1 Relationship identifiers 9
 - 8.2.2 Animal identifiers 9
 - 8.2.3 Other Identifiers 10
 - 8.2.4 Summary of data elements required to submit liveweight data to DIGAD 12
- 9 Submitting Static Liveweight Data..... 16
 - 9.1 Accessing the animal durable key 16
 - 9.2 Data submission to DIGAD 16

| | |
|---|----|
| 9.3 Liveweight data measurements submitted as a single event | 16 |
| 10 Certified Data Providers for Static Liveweight Data | 16 |
| Appendix 1 Factors that Cause Variations in Animal Liveweight (Informative) | 17 |
| Appendix 2 Examples of Herd Management Groups..... | 20 |

Log of Amendments

Standard issued by NZAEL Board the 6 June 2023 Version 05 May 2023 subject to a professional edit.

Amendment 1

Standard re-issued by NZAEL Board the 5 June 2024, Version 30 April 2024

| Amendment | Effective date | Version | Method of Authorisation |
|------------------|-----------------------|----------------|--------------------------------|
| Amendment 1 | 5 June 2024 | 30 April 2024 | NZAEL Board |

Summary of amendments:

Amendment 1:

Non-substantive changes

- Entire standard professional review for style.
- Section 6.2 'Capability and performance of weighing system'
Replaced bullet point 3 with bullet points '2' and a revised '3' to align the manufacturer specifications and practices for Certified Data Providers weighing animals.
- Table 2: NAIT Visual ID only permitted if another animal identifier is not available or the NAIT RFID cannot be read.

Substantive changes

Section 7.5 'Accounting for all animals'

- Redrafted to include permitted exemptions for contemporary age groups (Section 7.5.1.1) and TOP inspection subgroups (Section 7.5.1.2). These additions required the following inclusions:
 - milking regime as metadata in Table 5; and
 - new definitions; and
 - appendix 2 to provide examples of Herd Management Groups.

1 Introduction

Liveweight is an important phenotypic measure used for Animal Evaluation (AE). Liveweight data are recorded so that AE can calculate Estimated Breeding Values to indicate the genetic difference between animals at mature liveweight (at five years' of age, when animals have finished growing). The economic value for liveweight accounts for maintenance requirements and feed costs associated with growing and maintaining heavier animals, as well as the extra income associated with their calves and cull cows.

For more information on the importance of liveweight see Appendix 1.

2 Scope

This standard is a DIGAD data standard. It defines the requirements, processes, and procedures required for accurately recording static liveweight data and associated metadata, and submission of these data to DIGAD for use in animal evaluation for the animals enrolled in DIGAD.

This standard is applicable for Certified Data Providers (CDPs) providing body liveweight measurement services to farmers and data to DIGAD or to a Herd Record Provider (HRP). The standard includes growers of young stock (i.e. graziers) and measurements completed on lactating cows.

It does not apply to farmers (i.e. participants) collecting liveweight data for the animals under their care, and for which they have the right to submit data to an HRP. Where a farmer uses a CDP for static liveweight measurements and submits the data through their HRP, if the HRP does not provide the name of the CDP providing the data, the data are assumed to be provided by the participant (i.e. a non-certified source).

The International Committee for Animal Recording (ICAR) animal data exchange specification recognises a number of methods for observing animal liveweight, including: load cells, visual assessment, imaging, walk-over weighing, front-end weighing, and group weighing. Only the load cell method is allowed in this static liveweight standard.

The requirements for using a dynamic weighing procedure (e.g., a walk-over-weigher) will be provided as a separate standard.

3 Normative References

The following documents are referred to in the text in such a way that some, or all, of their content are included in this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- DIGAD Data Standard Terminology. This defines the terms used in this standard.
- NAIT Standard for Animal Identification Devices (December 2020), with amendments or replacements as gazetted by the New Zealand Government. This standard identifies the radio frequency devices applied to cattle and deer for NAIT tracing in New Zealand.
- ISO 11784:1996. Radio frequency identification of animals. The standard for the code structure used in radio frequency devices for identifying animals, including the amendments published in 2004 and 2010.

4 Terms and Definitions

For the purposes of this standard the following terms which have particular meaning in this standard

| | |
|-------------------------|--|
| Animal durable key | The primary unique animal identification assigned to each animal when it is enrolled with DIGAD. The animal durable key is a lifetime identification that persists regardless of change to other mandatory or optional identifiers. |
| Animal Evaluation model | The model used to calculate an animal's genetic performance. It includes a description of the nature and scope of factors and effects to include when analysing a particular trait for genetic performance. The model's description includes its equation, |

| | |
|---|--|
| | location parameters, dispersion parameters, and – in some cases – the distributional properties of its effects. The AE models that New Zealand Animal Evaluation Limited (NZAEEL) uses are documented by NZAEEL. |
| Animal identifiers | The industry identifiers used to identify an animal. In the NZS8100 Standard they are termed 'unique animal identifiers'. |
| Certified Data Provider (CDP) | Individuals or organisations that are certified by the approved Certification Body as meeting the appropriate standard for the supply of non-regulated data or information to NZAEEL. Each farmer (i.e. participant) can contract multiple Certified Data Providers. |
| Contemporary groups | <p>A set of animals that have an equal opportunity to perform. Animals will be assigned to the same contemporary group for the measurement activity where:</p> <ul style="list-style-type: none"> (a) Animals are at the same farm location and share the same environment (this includes the same geographic location, temperature, rainfall, and grass growth); and (b) Animals are in the same herd and share the same farm-management practices (this includes but is not limited to the stocking rate, supplement and feed regimes and walking distances). (c) Animals belong to the same age group (that is two-year-olds, three-year-olds, four-year-olds or five- to seven-year-olds). (d) For animals in a lactating herd, the animals have the same energy outputs such as milking regime (that is, OAD milking, TAD milking variable milking, calves are running with cows or dry); and (e) Animals share the same calving season. |
| Dairy Industry Good Animal Database (DIGAD) | A database containing ancestry and performance data for every recorded dairy cow in New Zealand. This database is intended to contain all the data required for AE. DIGAD contains the core database and other data fields. |
| Distributed milking system (DMS) | A system where individual cows in a herd select their milking time and are milked at variable times and frequencies using automated or robotic machinery. |
| Dynamic weighing | Measures weight while the animals are in motion and walking over a weighing scale. The scale measures the average weight based on the force exerted by the animal as it crosses the scale. Once the internal calculation is completed by the balance, it will hold the value. |
| Growers/graziers | A person who rears and grows young stock as replacements for a dairy milking herd. |
| Herd management group | Animals grazing as a group of animals, a herd, or a mob where animals have an equal opportunity for energy inputs and energy outputs. |
| Herd Record Provider (HRP) | A DIGAD Data Provider certified by the approved Certification Body as meeting the appropriate standard for the supply of data or information to NZAEEL. An HRP is contracted by a farmer to enrol animals, manage animal movements, and animal termination in DIGAD on behalf of the farmer. Each farmer (i.e. participant) can only contact one Herd Record Provider. |

| | |
|------------------------------------|--|
| Liveweight | The weight of a live animal. |
| Load cell | A device for measuring force along a single axis, typically used to measure mass (ISO 19380:2910). |
| Metadata | Data that provides information about other data and assists with forming accurate contemporary groups. |
| Milking regime | Milking intervals prescribed by a farmer for cows in a herd or herd-management group. Intervals can be OAD, TAD, variable or distributed. |
| NAIT location number | A registered property where animals are kept is known as a NAIT location, and can comprise of a single property or 2 or more properties that fall within or straddle the circumference of a circle with a 10-kilometre radius. |
| Participant code | Code issued to the herd owner by the manager of the core database, via the Herd Record Provider. |
| Traits Other than Production (TOP) | The physical attributes of cow which contribute to the overall value of the cow in a herd. Farmers score animals for traits relating to their management at milking time and qualified inspectors score traits relating to the physical conformation of the animals. |
| TOP inspector | An inspector qualified to score TOP traits for dairy animals. |
| TOP inspection subgroup | A subset of two-year old cows on farm, that have been selected and approved for assessment under the Traits Other than Production (TOP) Standard and Guidelines. |
| Resolution | The smallest difference between indications of a meter that can be meaningfully distinguished (ISO 12242:2012). Or the smallest measurement difference that can be discriminated given the current device settings. Specified in units, for instance 0.5 (kilograms) (ICAR ADE). |
| Static weighing | Measurement of the weight of a live animal using load cells, while the animal is restrained in a weighing system. |
| Variable milking | Any milking sequence where a cow is not repeatedly milked OAD or TAD. For example, variable milking could be three milkings in two days (3in2) or ten milkings in seven days (10in7). |
| Weighbridge or weighing system | Weighbridge - a device with a platform, normally flush with the adjacent surfaces, used to determine mass (ISO 6016:2008). |
| Young stock | The weaner through to in-calf heifer age group. The data collected during the growth phase of young stock provide an early prediction of animals' mature liveweights. |

5 Information About Liveweight Data (Informative)

(This information is provided in Appendices 1 and 2 – it is required to be understood to receive certification)

5.1 Introduction

The most accurate liveweight data are those recorded by weighing systems, either static or dynamic (i.e. walk-over weighers).

Dynamic weighing systems collect data automatically without requiring a person to be present to operate them.

Static weighing systems require a person to operate the scales and manage stock. Thus, the process is time consuming and labour-intensive. Static weighing is typically undertaken less frequently than weighing using dynamic systems; consequently, single static weight measurements are typical.

With a static weight bridge an animal proceeds directly onto the platform and stands for about 10–15 seconds, while the weighing system comes to equilibrium, and then animal's weight is recorded in kilograms (kg). The scale resolution needs to be 2 kg. A single data point is recorded.

This standard applies to static liveweight data which are used for animal evaluation. For the dynamic liveweight data standard, a separate standard will be provided in the future.

5.2 Types of liveweight data

Two categories of data are important for predicting the mature liveweight of animals on farm:

- **Young stock liveweights.** These data are collected during an animal's growth phase (from weaning to in-calf heifer) and provide an early prediction of its mature liveweight.
- **Lactating cow liveweights.** Data collected from all lactating cows, but ideally focussed on first lactation through to eight-year-old animals.

5.3 Sources of liveweight data

Liveweight data can be submitted to DIGAD by the participants (i.e. farmers) via their CDP or HRP.

| Data type | Data source | Method of collection | Collection frequency and important times |
|----------------|------------------------------------|--|---|
| Young stock | Participants, CDPs (e.g., growers) | Weighbridge Visual assessment until June 2023 | Ideally every 4 to 8 weeks but at least every 12 weeks, at weaning and at the start of mating. |
| Lactating cows | Participants or CDPs | Weighbridge Visual assessment until April 2022. | As often as collected. Ideally three times per season, but only once per season is still a valuable contribution to animal evaluation. |

5.4 Importance of liveweight data

Young stock liveweights provide valuable data to measure animal growth and indicate whether heifers are on track to calve at the target weight for their age. The data also provides an early indication of mature liveweight for animal evaluation. It is the only objective measure of heifer performance.¹

Weighing is also important for lactating cows as their liveweight shows how they are reacting to their feed and environment, as opposed to the body condition score, which shows whether an animal is fat or thin. Liveweight provides valuable information for animal evaluation in confirming the accuracy of predicted mature weights.

Liveweight is one of the traits used to determine an animal's economic value (EV). The liveweight economic value accounts for maintenance requirements and feed costs associated with growing and maintaining animals. The heavier an animal's mature liveweight, the higher their maintenance feed costs, cull cow value and value of their calves.

The more frequently animals are weighed the more accurate the liveweight predictions for animal evaluation, animal management decisions and the more quickly a health problem will be detected, especially for young stock.

5.5 Factors affecting liveweight measurements

5.5.1 Method of collection

The liveweight collection method affects data accuracy. Research shows many methods over- or underestimate the actual liveweight (see link²). In the past New Zealand's liveweight measurement methods included both visual liveweight assessments for Traits Other than Production and static liveweights. The measurements derived from both methods were included in animal evaluation. However, from April 2022 the use of data from visual liveweight assessments ceased leaving only the more accurate and reliable static liveweight measures.

This standard requires the method used to determine the liveweight and other data relevant to the measurement be collected as metadata. This ensures data integrity and provides flexibility, which futureproofs the collection of liveweight data for animal evaluation.

5.5.2 Weighing times

To obtain accurate liveweight measurements animals should be weighed at approximately the same time of day. This reduces the variation in measured liveweight due to changes in feed and water intake, and milking, faecal and urinary losses.

In addition, if animals are transported there will be significant changes in liveweight due to stand-off times before and during transportation. When animals are transported liveweight measurement should be deferred to at least 24 hours after transport, to allow animals to have a recovery period and access to feed and water. If transport has taken several days a longer period of recovery is required (approximately 5-10 days).

¹ For more information see <https://www.dairynz.co.nz/animal/heifers/>.

² Research shows other methods tend to over or under estimate actual liveweight data (Kesang Wangchuk, Jigme Wangdi & Mindu Mindu (2017) - <https://www.tandfonline.com/doi/full/10.1080/09712119.2017.1302876>

6 Requirements for Weighing Systems (Normative)

6.1 Static liveweight data measurements

This standard applies to collecting liveweight using a static weighbridge, for a single weighing event.

If, an animal is re-weighed within 24-hours each measurement shall be provided as a single measurement separated with the date and time (i.e. the data should not be provided as a mean).

6.2 Capability and performance of weighing system

A weighing system used by a CDP under this standard, as a composite of all its components (such as a platform, load cells, and indicator) shall:

1. be capable of supporting and enabling the movement of cattle in the expected weight range for which it will be used;
2. have the capability to meet the resolution requirements in Table 1;
3. be calibrated according to the manufacturers' instructions;
4. restrain the animal so that it is not moving forwards or backwards out of the weighing system while being weighed, and
5. either be able to assess when instantaneous weight measurements are reaching equilibrium within the configured resolution and use this to capture the weight, or, alternatively, allow a human operator to assess equilibrium and manually capture the weight.

Table 1: Scale resolution requirements for static liveweight

| Weight (kg) | Resolution (kg) |
|-------------|-----------------|
| 0-200 | 1.0 |
| 200-500 | 1.0 |
| 500-2000 | 2.0 |
| 2000+ | 5.0 |

6.3 Certification of weighing equipment

Use of certified weighing scales is not required to meet this standard.

The DIGAD Data Standards Committee agreed the certification of weighing scales for cattle was not practical for applying to the existing scales on farms and that it would create a barrier for liveweight data being provided to the DIGAD.

However, the CDP should be confident that the weighing scales are acceptable for weighing cattle (e.g., see section 7.2).

6.4 Installation of weighing systems

Weighing scales shall be installed according to the manufacturer's instructions.

Weighing systems shall be installed on a solid foundation, so the scales do not move when an animal is on the weigh bridge or walking across it. The load cells alone shall support all the weight to be measured.

The weighing system shall be level (as assessed by eye) and sheltered from strong wind and gusts. The weighing system shall be unobstructed by dirt or stones under the platform and the load cells shall be level and not sitting unevenly on dirt or stones.

When installed, the weighing system shall not produce electronic interference that affects the transmission of data or the operation of milking parlour equipment.

7 Standard Operating Procedure (Normative)

The CDP shall have a standard operating procedure for weighing cattle shall include the following key components.

7.1 Training

Suitably trained and experienced people (e.g., the manufacturer or vendor) shall train operators in the installation, calibration, and use of the weighing system. Training records shall be held for each person recording liveweight measurements.

7.2 Weighing system installation and configuration

The standard operating procedure shall include checks that ensure:

- The weighing system has been adequately maintained and is installed in compliance with section 6.4 of this standard.
- The tare balance, or weight indication shall be zero when there is no animal in the weighing system.
- The scale is weighing accurately and has full and free movement (not rubbing on structures or resting on dirt or debris). Acceptable checks for weight accuracy include weighing people, or containers holding a known quantity of water. For more information see <https://trademeasurement.tradingstandards.govt.nz/for-business/equipment-used-for-weighing-and-measuring/>

7.3 Consistency of weighing events

To ensure the most accurate liveweight measurements, and to minimise the impact of gut fill and urinary excretions, animals should:

- have had ready access to feed,
- be weighed at a consistent time of day (to offset diurnal weighing patterns),
- not be kept off feed or water (i.e. in a yard) for more than two hours, and
- have their pregnancy status recorded if they are weighed during their third trimester of pregnancy.

To improve data integrity, the weigher should have the previous liveweight measurements of the animals they are going to weigh, for each herd management group (i.e. mob/herd). This helps with assessing the accuracy of the weighing system and accounting for all animals at the weighing event.

7.4 Weighing procedure

7.4.1 Identification of animals

- The weigher shall ensure that animals are uniquely identified by a Birth ID or RFID. If management tags are read by the weigher, these shall be linked to the Birth ID for the animal and their accuracy validated before data are submitted.
 - All animals shall be identified with the herd or group of animals that they have been grazing with (i.e. the herd management group. See section 8.2.3.2). The data for different groups of animals should be kept separate and not amalgamated into a single weighing group.
 - If an animal has grazed with a different group of animals, its weight shall be recorded with the herd management group it has grazed with, even if the animal returns to its original grazing group later.

7.4.2 Zero, or tare, of weighing system

To ensure accurate measurements:

- The scales shall be set at zero when there is nothing on the scales.

- They shall be reset to zero at regular intervals during the weighing event. Re-taring during a weighing event, accounts for the collection of dirt on the scales, especially where an automatic zero function is not built into the scales.

7.4.3 Ensuring correct weight

To ensure an accurate measurement:

- Each animal weighed shall be fully on the weighing platform which is supported by the load cells, and not supported by or leaning against non-weighing infrastructure.
- No other animal or person shall be touching the weighing platform.
- If the weighing system does not have a stability function³ the weigher shall ensure that the animal is stationary (restrained from movement onto or off the weighing platform) for 10-15 seconds to achieve a static weight.

7.5 Accounting for all animals in a herd management group

To ensure data integrity all of the animals in a herd management group (animals grazing as a group of animals or a mob) shall be weighed or a measurement discrepancy code shall be used to provide a valid reason for an animal's exclusion (see section 8.2.3.3). For permitted exemptions all available cows present shall have a BCS assessment, and any measurement discrepancy code provided by the farmer shall be recorded.

7.5.1 Permitted exemptions

Liveweight measurements are also permitted for the groups defined below (see sections 7.5.1.1 and 7.5.1.2).

7.5.1.1 Contemporary age groups

Liveweight measurements are permitted for the following age groups:

- a) two-year-old cows; or
- b) three-year-old cows; or
- c) two- and three-year-old cows.

These animals may be weighed separately from the lactating cows in a herd or a herd management group.

To be eligible for acceptance as a permitted age group, all of the animals in the age group shall either be managed as a herd management group or if animals have been drafted from more than one herd management group then their herd management groups shall be recorded. See Appendix 2 for examples of herd management groups.

7.5.1.2 Liveweights associated with Traits Other than Production (TOP) inspection subgroups

TOP inspection subgroups of two-year old first lactation cows can be weighed if they have been selected under the 'Traits Other than Production (TOP) Standard and Guidelines' ('TOP standard')⁴.

The list of herds and animals in the TOP inspection subgroup shall be provided to the participant and to NZAEL. NZAEL shall complete the analysis of the liveweight data for the TOP inspection as outlined in the TOP standard.

³ The stability function assesses when instantaneous weight measurements are reaching equilibrium within the configured resolution.

⁴ 'TOP standard' Genetic Evaluation Inspection Groups (Section 5.1), Analysis of TOP inspection subgroup herds (Section 5.2) and Appendix 3.

7.6 Recording animal health factors affecting weight measurement

Where a person identifies that an animal's weight has been compromised by ill health a measurement discrepancy code may be recorded as metadata for the weight.

7.7 Recording animal movements or termination

Participants and their HRP's are responsible for recording animal movements between locations (including the reason for the movement), and for an animal's termination (and the reason for its termination).

The CDP's responsibility is limited to recording liveweights at the time of the weighing event and accounting for all animals in the herd management group using the measurement discrepancy code (i.e. recording metadata for the liveweight measurement, not recording animal movements).

8 Liveweight Data Requirements (Normative)

8.1 Introduction

Three types of data are required for each weighing event to ensure accurate data are available for animal evaluation:

- static data (entered at a herd level for each weighing event),
- animal weights, and
- metadata for each animal.

All data are submitted to DIGAD and linked to DIGAD unique identifier i.e. the animal durable key.

8.2 Description of data elements submitted with liveweight data

The following data elements (i.e. metadata) are used when entering data from a liveweight weighing event into DIGAD.

8.2.1 Relationship identifiers

8.2.1.1 Certified Data Provider Identifier

The Certified Data Provider Identifier alphanumeric code is used to identify the participant or CDP interacting with the DIGAD. It is issued by the DIGAD Database Manager. It is used when uploading data to DIGAD (see Table 3).

8.2.1.2 Participant code

HRP's use a Participant code to identify a herd owner. It is a three to five-letter alphabetical code excluding 'vowels' and 's' and 'z,' issued by the DIGAD Database Manager. The Participant code shall be allocated before enrolling animals with the DIGAD and it is required to access each animal's animal durable key.

8.2.2 Animal identifiers

8.2.2.1 Animal durable key

The animal durable key is the primary unique animal identification that DIGAD assigns to each animal when it is enrolled with DIGAD. It is a lifetime identification and persists regardless of change to other mandatory or optional identifiers. It is assigned so that DIGAD has internal identifiers to maintain its integrity.

The animal identifiers shall be linked to the animal durable key for data to be submitted to DIGAD.

The animal durable key shall be used to submit data to the DIGAD.

If an animal has not been issued with an animal durable key the participant has not enrolled the animal with DIGAD.

8.2.2.2 Birth ID

The Birth ID is allocated to animals at birth. The identification for dairy animals includes: a Participant code (representing the participant to whom the tag or identifier was issued), a four-digit year of birth for the animal, and a unique number of up to four digits for each animal. However, the birth identification tag in the animal's ear has the year of birth for the animal (without the century component). The Birth ID in the animal's ear tag is the same format as the NAIT visual identification Participant code–year–sequence number.

A Birth ID or the NAIT RFID number are required when accessing an animal durable key.

8.2.2.3 NAIT RFID number

Radio-frequency identification (RFID) or electronic identification (EID) tags are microchip transponders containing a digital RFID number. NAIT uses these in New Zealand to allocate a unique identification to animals at birth. They are also known as a "NAIT Device" and shall conform to NZS/ISO 11784/5. The RFID number is globally unique and can be read by an RFID scanner. Rules for NAIT identifiers are managed by OSPRI through the NAIT Standard for Animal Identification Devices (NAIT Standard).

NAIT devices can get lost or damaged sometimes. When this occurs, the animal is re-tagged with a NAIT Replacement Device. The transponder chip inside the device will have a new RFID number.

The NAIT RFID number and/or the Birth ID are required when accessing the animal durable key.

8.2.2.4 Format for visual identification codes on NAIT devices

The visual identification code is printed on the outside of the tag in which the RFID number is encoded. Only one visual identification code may be printed on a device. The permitted formats for the codes are available on NAIT guidelines for approved animal identification devices, which are available at www.ospri.co.nz

There are three formats:

1. NAIT number (2 formats); or
2. NAIT birth tags and duplicate birth tags (2 formats); or
3. NAIT replacement tags (2 formats).

The NAIT number formats or the NAIT birth tags are allocated to animals at birth (see Table 2). The NAIT replacement tags (see Table 2) are used if the original NAIT device (i.e. RFID tag) has been lost or damaged. Alternatively, farmers may order a duplicate birth tag if the original NAIT device placed in the animal has been lost or damaged. The duplicate tag is an RFID tag with the same visual identifier that was used to tag the animal at birth. HRP's refer to duplicate tags as 'replacement' tags. A duplicate tag is unique, as it is linked to a new RFID number.

8.2.2.5 Herd management number

The herd management number is a short number, typically allocated by the person managing animals, to simplify visual identification of an animal in the herd. The herd management number should be unique within the herd but is often reissued to another animal when it is no longer required by the animal to which it was initially issued. The herd management number has a start date, which is the day when it was first allocated to an animal on farm. When no longer required by the animal an end date is entered.

If the herd management number is used it is mandatory to link the animal to a Birth ID or NAIT RFID number to be able to access the animal durable key to submit data to DIGAD

Participants and their HRP's are responsible for recording herd management number with DIGAD.

8.2.3 Other Identifiers

8.2.3.1 Farm location

A farm's location, where a measurement occurs, gives an indication of the environmental and climatic conditions experienced on a farm and by the animals on it. The spatial variation, encompassing the diversity of regions and environmental conditions on a farm, is one of the environmental factors that

needs to be accounted for in the Animal Evaluation model. The farm location is also an important component for the Animal Evaluation model in forming contemporary groups.

For practical reasons, the NAIT location number is used to identify a farm's location. The number is familiar to participants, easily remembered, and provides a simple identification to link the farm location with environmental conditions.

A NAIT location number is allocated when a farm is registered with NAIT. It may be linked to one or more rating units (which in turn link to land parcels). NAIT location numbers are managed through the National Animal Identification and Tracing Act 2012.

The NAIT location number may be linked to other farms within a 10-kilometre radius.

8.2.3.2 Herd management group

A herd management group is a group of animals, within a single farm location, that have same farm management practices (such as supplements, feed regimes, stocking rate and walking distances). There are often different herd management groups at the same farm location.

Herd-management groups are required if accurate contemporary groups are to be formed for animal evaluation. A herd management group enables an individual animal's performance to be compared with herd mates under the same farm-management conditions.

NOTE – Farmers may refer to a herd-management group as a 'mob', 'sub-herd', or 'herd'.

The herd management group shall be recorded for each group or herd of animals. The herd management group may be identified using:

- a sequential number allocated by the weigher, specific to the herd and weighing event on the day; or
- the date and time stamps for the start and end of weighing event, specific to the herd, on the day.

8.2.3.3 Measurement discrepancy codes

Accounting for all animals expected to be present in a herd management group at a weighing event is an important metric for maintaining data quality for animal evaluation. measurement discrepancy code is used to indicate the reason for the absence of an animal from a herd for an event.

There are three reasons for an absence of a weight measurement from an animal expected to be in a herd management group:

6. the biological status of the animal (such as sick or injured), or
7. farm management anomalies which have caused animals to miss the weighing event (such as the animal accidentally left in paddock, or the animal moved itself to an adjacent herd), or
8. a processing issue with submitting data to DIGAD (such as the animal is not enrolled with DIGAD).

All data are submitted to the DIGAD with the data linked to each animal's DIGAD unique identifier (animal durable key).

8.2.4 Summary of data elements required to submit liveweight data to DIGAD

Tables 2 - 5 summarise the data elements required for submitting static liveweight data to the DIGAD. The tables describe the data elements, requirements, format, and verification for liveweight data submitted to the DIGAD.

Table 2: Participant code and the eligible animal identifiers (at least one animal identifier is required) for obtaining an animal durable key.

| Data | Required | Format and Verification |
|---|---|---|
| Participant code | Yes | Alpha – 3 to 5 characters Verification: shall link to an existing Participant code |
| Animal identifiers | | |
| Birth ID | Yes*, and/or NAIT RFID Tag and/or NAIT Visual ID | This option is typically used for dairy cattle. String of up to 8-13 characters, includes: <ul style="list-style-type: none"> Participant code (3 to 5 characters excluding vowels, 's' and 'z') year of birth (4 digits) birth identification number (1 to 4 digits) Examples: ABC-2015-1, or ABCDF-2015-1, or ABCDF-2015-1234 The Birth ID is truncated (without the century component) when used in on an animal ear tag. Examples: ABC-15-1, or ABCDF-15-1, or ABCDF-15-1234 Verification: shall link to the animal durable key |
| NAIT animal identifiers | | |
| NAIT RFID Tag | Yes*, and/or NAIT Visual ID and/or Birth ID | 16-character string that is the decimal representation of the binary ISO 11784 code, includes: <ul style="list-style-type: none"> ICAR registered manufacturer code (3 digits) separator animal identification (12 digits) Example: 981-018285778231 Verification: shall link to the animal durable key |
| NAIT Visual ID codes printed on a NAIT RFID tag | Yes*, only if another Animal Identifier is not available or the NAIT RFID cannot be read. | There are three formats for NAIT Visual IDs: <ol style="list-style-type: none"> NAIT number (2 formats); or NAIT birth tags and duplicate birth tags (2 formats); or NAIT replacement tags (2 formats). <ol style="list-style-type: none"> NAIT number <ul style="list-style-type: none"> NAIT number–year–sequence number String of up to 18 characters includes: <ul style="list-style-type: none"> NAIT number (location) (2 to 6 digits or 8 digits) separator year of birth (2 digits) |

| | | |
|--|--|--|
| | | <ul style="list-style-type: none"> • separator • sequence number (animal number) (up to 6 digits) <p>Examples: 12345678-15-1 or 12345678-15-123456</p> <p>or</p> <ul style="list-style-type: none"> • NAIT number–sequence number <p>String of up to 15 characters includes:</p> <ul style="list-style-type: none"> • NAIT number (location) (2 to 6 digits or 8 digits) • separator • sequence number (animal number) (up to 6 digits) <p>Examples: 12345678-1 or 12345678-123456</p> <p>2. NAIT birth tags and duplicate birth tags</p> <ul style="list-style-type: none"> • Participant code–year–sequence number <p>String of up to 15 characters, includes:</p> <ul style="list-style-type: none"> • Participant code (alpha 3 to 5 characters (excluding vowels, 's' and 'z')) • separator • year of birth (2 digits) • separator • sequence number (animal number) (up to 6 digits) <p>Examples: ABC-15-1, or ABCDF-15-123456</p> <p>Or</p> <ul style="list-style-type: none"> • Participant code–sequence number <p>String of up to 12 characters, includes:</p> <ul style="list-style-type: none"> • Participant code (alpha 3 to 5 characters (excluding vowels, 's' and 'z')) • separator • animal sequence number (up to 6 digits) <p>Examples: ABC-1, or ABCDF-123456</p> <p>3. NAIT replacement tags</p> <ul style="list-style-type: none"> • RFID number–NAIT number <p>String of up to 25 characters, includes:</p> <ul style="list-style-type: none"> • RFID number (16 digits) (see RFID above) • separator • NAIT number (2 to 6 digits or 8 digits) <p>Example: 951-000123456789-12345678</p> <p>or</p> <ul style="list-style-type: none"> • RFID number–Participant code <p>String of up to 22 characters, includes:</p> <ul style="list-style-type: none"> • RFID number (16 digits) (see RFID above) • separator |
|--|--|--|

| | | |
|--|--|--|
| | | <ul style="list-style-type: none"> Participant code (alpha 3 to 5 characters (excluding vowels, 's' and 'z')) <p>Example: 951-000123456789-ABCDF</p> <p>Verification: shall link to the animal durable key</p> |
|--|--|--|

*Using more than one animal identifier strengthens the process of matching an animal to its animal durable key.

Table 3: Static identifiers required for a weighing event.

| Data Element | Required | Format and Verification |
|--------------------------------------|----------|---|
| Certified Data Provider Identifier | Yes | Alphanumeric – 1- 255 characters Verification: Shall link to an existing Certified Data Provider Identifier |
| Farm location where the event occurs | Yes | NAIT location number. Up to 8 alphanumeric characters (usually digits). Verification: a valid NAIT number |
| Measurement method | Yes | Static |

Table 4: Herd management group data elements required for a weighing event.

| Data Element | Required | Format and Verification |
|--|---|--|
| Date and time – start of weighing ¹ | Yes, if the date and time stamps are not provided for each animal weight. Optional if the date and time stamp are provided for each animal weight. | Date and time – YYYY-MM-DDTHH:MM:SS. |
| Date and time - end of weighing ² | | Date and time – YYYY-MM-DDTHH:MM:SS. |
| Herd Management Group (HMG) | Yes | Numeric – 2 digits (sequential number specific to the weighing event) or the date and time stamps for the start and end of weighing event. |
| Number of animals expected in HMG | Yes | Numeric |

¹Time when the first animal in the herd management group was weighed.

²Time when the last animal in the herd management group was weighed.

Table 5: Data elements required for each animal for a weighing event.

| Data Element | Required | Format and Verification |
|-------------------------------------|---|--------------------------------------|
| Date and time stamp for each weight | Required if start and end times are not | Date and time – YYYY-MM-DDTHH:MM:SS. |

| | | |
|------------------------------|--|--|
| | recorded for the herd management group | |
| Animal durable key | Yes, required to submit with data | Numeric – integer |
| NAIT RFID Tag | Optional, or Birth ID | See Table 2 |
| Birth ID | Optional, or NAIT RFID Tag | See Table 2 |
| Liveweight measurements | Yes, or provide a measurement discrepancy code if null | Kilograms - Digit 1 – 4, “.”, digit |
| Measurement discrepancy code | Yes, where there is no weight | 01 Farm anomaly ³ 02 Animal sick or injured 03 Processing issue ⁴ |
| Milking regime | Yes, for cows in a HMG where milking regimes are not all the same, or the HMG has a distributed milking system | OAD Once-a-day milking ⁵ TAD Twice-a-day milking ⁵ DRY Cows are in the HMG but dry ⁵ 3AE Thrice-a-day milking 3in2 Three milkings in two days 10in7 Ten milkings in seven days DMS Distributed milking system |

³Farm anomaly means issues, errors, or events occurring on the farm that prevent a liveweight measurement occurring. Includes animals missing from the expected group of animals to be weighed.

⁴Processing issue means that the data for the animal was not able to be submitted to DIGAD. This includes, for example, animals that have not been enrolled with DIGAD and therefore have not been issued with an animal durable key. Their data can be submitted once the animal has been enrolled and an animal durable key issued.

⁵The milking regimes most typically found in a HMG where milking regimes are not all the same.

Note: The animal durable key and the date and time stamp for the liveweight measurement and the liveweight measurement can be included in a participant’s herd management system via their HRP.

9 Submitting Static Liveweight Data

9.1 Accessing the animal durable key

The animal durable key for animals included in a weighing event shall be sourced from the DIGAD before submitting data to DIGAD. It is used when submitting liveweight data and associated data fields.

The animal durable key is only available for animals enrolled with the DIGAD. CDPs need to enrol animals into the DIGAD through their Herd Record Provider.

If a CDP does not have an animal durable key at a weighing event they shall enter the measurement discrepancy code 03 to identify the data processing issue. The liveweight data will not be able to be submitted to DIGAD until the animal has been enrolled through an HRP and the relevant animal durable key is available.

9.2 Data submission to DIGAD

The CDP shall use the format files provided by NZAEL to upload data or engage with NZAEL and produce the message interface with DIGAD as set out in the DIGAD CDP Interface Specification for Herd Recorders (this may be updated from time-to-time following consultation with CDPs).

A copy of the format files can be provided by emailing support.NZAEL@dairyNZ.co.nz.

A copy of the DIGAD CDP Interface Specification for Herd Recorders is available on the DairyNZ website.

9.3 Liveweight data measurements submitted as a single event

A consistent recording approach is required for data submitted to the DIGAD so the data can be used correctly in animal evaluation. Static liveweight data shall be submitted as a single measurement. If additional liveweight measurements are made on the same day, the measurements shall be submitted as a single measurement separated by the time of the weighing event on the day. The liveweight measurements shall not be submitted as a mean of two or more measurements. A single data measurement and a mean value are not treated the same in animal evaluation⁵.

10 Certified Data Providers for Static Liveweight Data

For a list of CDPs for static liveweight, please email support.NZAEL@dairyNZ.co.nz.

⁵ Combining the data as a mean result is a completely different estimate of the residual of the means. A mean data measurement submitted as a single data point has a significant effect on the AE outputs and reliability estimates.

Appendix 1 Factors that Cause Variations in Animal Liveweight (Informative)

Introduction

An animal's liveweight changes significantly over time due to; its breed, the genetic factors it received from its dam and sire; its growth phase; stage of the lactation cycle, milk production, and access to feed and water. An animal's liveweight includes the weight of its body tissues and the contents of its alimentary tract (gut fill), bladder and udder.

Variation in Liveweight Data due to Breed and Genetics

Liveweight data provide important information for genetic evaluation and also for a farmer's culling, breeding, and management plans.

DairyNZ information indicates that the mature liveweights of 6 to 8-year-old cows ranges from 420 to 600 kg Link (<https://www.dairynz.co.nz/animal/heifers/liveweight-targets/>). There are large differences between the mature liveweights of Jersey and Holstein Friesian breeds. In the 2020-21 dairy season DairyNZ reported the average liveweight for 6 to 8-year-old Jerseys ranged from 425 to 432 kg and Holstein Friesians ranged from 505 to 514 kg [nz-dairy-statistics-2020-21-web.pdf](https://www.dairynz.co.nz/nz-dairy-statistics-2020-21-web.pdf) (dairynz.co.nz).

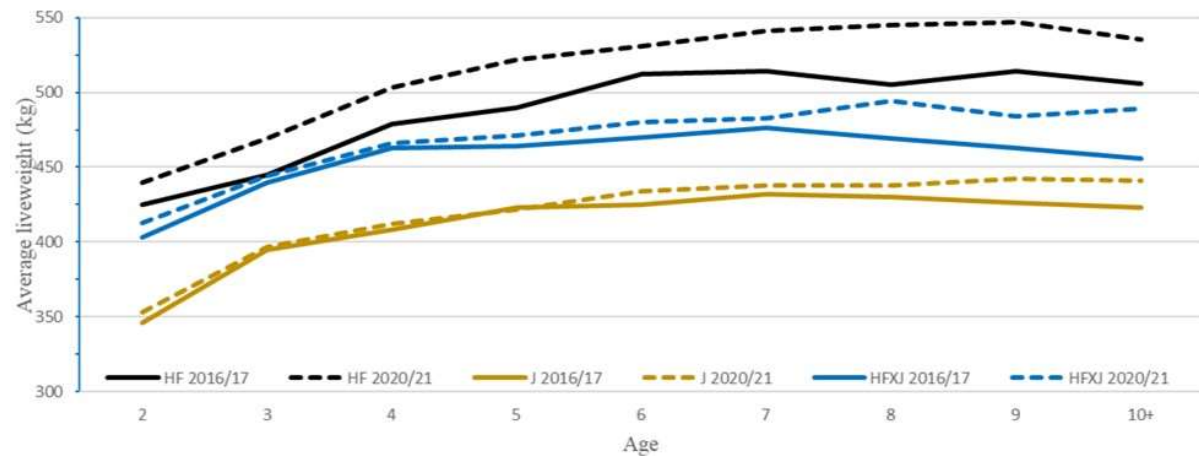


Figure A1.1. Liveweight by age and breed (Holstein Friesian (HF), Jersey (J), Crossbred (HFXJ)) of cows in 2016/17 and 2020/21.

Mature liveweights are particularly variable for the national herd given the large genetic variation amongst offspring (derived from dam and sire) and the dominance of crossbred animals⁶. Thus, it is important to measure the liveweight of individual animals and include them in animal evaluation to improve national average liveweight predictions.

Farmers who submit liveweight data to the DIGAD receive animal evaluation information that is specific to their herd. Including liveweight data from a farmer's own herd dramatically improves the estimation of a cow's liveweight breeding values when compared with relying only on information drawn from an animal's relatives in other herds. This enhances a farmer's culling and breeding decisions.

⁶ (49.6% of the national herd in the 2020-21 dairy season) <https://www.dairynz.co.nz/search/?q=new-zealand-dairy-statistics>)

Variation in Liveweight During the Lactation Cycle

An animal's liveweight changes during the lactation cycle which means the timing of each liveweight measurement is important. The changes depend on the stage of lactation, milk production, changes in feed intake, and the animal's genetics (see Figure A1.2). Equally, noting the herd management group is important, so an animal is measured with her herd mates.

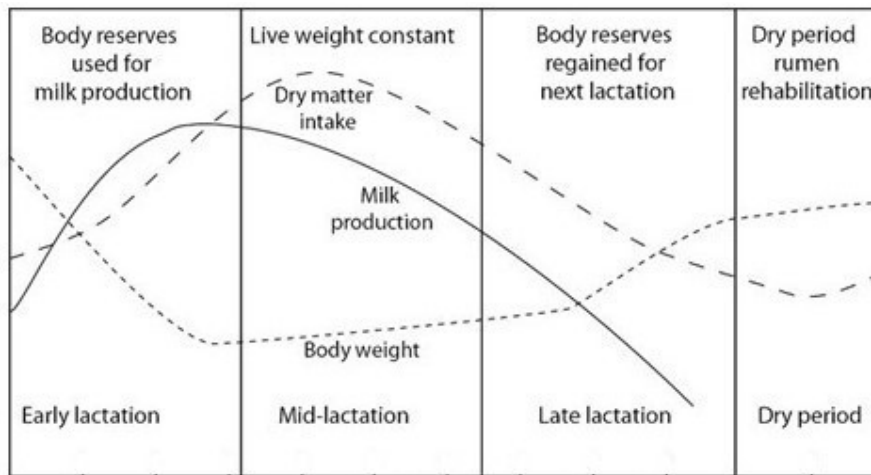


Figure A1.2. The relationship between dry matter intake, milk yield and liveweight changes in a cow during her lactation cycle.

Figure A1.2 shows the lactation cycle is split into four phases: early, mid and late lactation, followed by the dry period. The dry period should last at least six weeks, preferably eight weeks⁷, and includes the three weeks pre-calving (transition period). For about 12 weeks after calving cows usually rely on their own body condition reserves to provide energy, in addition to that consumed. The liveweight of the animal declines as the energy released is used to produce milk, allowing them to achieve higher peak production than would be possible if they relied on their diet alone. In the period from calving to peak production the cow's appetite increases as the rumen stretches and the rumen papillae regrow. Maximum appetite occurs at about 10 – 12 weeks after calving and at this point the cow can consume all the nutrients she requires for production. During this period her liveweight tends to remain constant. Her liveweight tends to increase during late lactation and plateaus again during the dry period. Recording a cow's calving date and her herd management group (i.e. the cows with same feeding regime and walking distances) allows the measurement of the genetic difference between a cow and her herd mates, to determine an estimated Breeding Value for liveweight. The correct calving date for the cow and the date of the liveweight measurement enable the information on the days in milk or stage of lactation to be derived.

Variation of Liveweight During a 24-hour Period

Grazing patterns and water intake significantly impact on liveweight measurements. Cattle typically have more, longer feeding periods during the day and shorter feeding periods at night. Thus, there is a diurnal pattern associated with liveweight measurements, particularly when combined with milking events. Gut fill can account for up to 22%⁸ of an animal's liveweight. Cattle that graze on pasture, or are fed roughage, have a higher percentage of their liveweight as gut fill than those on a grain diet, and lose liveweight at a faster rate between feedings.

⁷ <https://www.dairynz.co.nz/animal/cow-health/mastitis/dry-period/>.

⁸ 22% reference <https://www.dairynz.co.nz/animal/heifers/weights-weighing/>

Liveweight should be measured at approximately the same time of day, or at the same time in an animal's grazing cycle, to be more accurate. This reduces the variation in liveweight measurements due to changes in feed and water intake, and milking, faecal and urinary losses.

Changes in gut fill, or bladder or udder contents will cause significant changes in liveweight. The patterns of grazing, urination and milking therefore impact on the liveweight measurement.

Weight Changes Arising From Transportation

Animals should not have access to green feed for at least four hours before being transported to maintain animal welfare. Consequently, there can be a significant change in liveweight when animals are transported to new farm locations or abattoirs. Animals lose liveweight most rapidly (by 40%) during the first 12 hours without feed and water. The rate of loss slows progressively, with 60% loss after 24 hours. The higher the feed quality, the more quickly gut fill will decline. It is therefore important that animals are given at least 24 hours to recover from transport before taking liveweight measurements and longer (up to a week) when animals have had restricted access to feed and water for 24 hours.

Effect of road transport for up to 24 hours followed by twenty-four hour recovery on live weight and physiological responses of bulls | BMC Veterinary Research | Full Text (biomedcentral.com) -

<https://bmcvetres.biomedcentral.com/articles/10.1186/1746-6148-6-38>

Liveweight loss and recovery in cattle (Future Beef AUS) -

<https://futurebeef.com.au/resources/liveweight-loss-and-recovery-in-cattle/#:~:text=Available%20evidence%20indicates%20that%20cattle%20require%203%20to,or%20on%20pasture.%20Jennifer%20Wythes%2C%20formerly%20QLMA%20Brisbane>

¹ and ²: Livestock Improvement Corporation and DairyNZ Limited. 2016/17¹ and 2020/21². New Zealand Dairy Statistics 2015-16. Available: <https://www.dairynz.co.nz/search/?q=dairy+statistics#>

Appendix 2 Examples of Herd Management Groups

(Informative)

Introduction

Herd management groups are required if accurate contemporary groups are to be formed for animal evaluation. A herd management group enables an individual animal's performance to be compared with herd mates under the same farm management conditions. Farmers may refer to a herd management group as a 'mob', 'sub-herd', or 'herd'. The principles for herd management groups are the same for livestock whether young stock or cows.

Farmers may run groups of animals separately for a range of reasons, such as:

- the animals are lighter or smaller and additional feed is required to improve their growth or body condition score;
- the heifers being kept separate from the main herd while they mature and to reduce 'bullying' by more mature cows;
- they have a health issue, such as lameness;
- the farmer prefers a group of lactating cows to be closer to the milking parlour, for example, to shorten the walking distance on larger farms; or
- there are autumn and spring calving herds on the farm.

These scenarios occur as the result of sound farm management decisions. However, they will impact on the accuracy of animal evaluation outputs because the groups of animals are in separate herd management groups. For animal evaluation, the animals should all be grazing together as a group and have the same treatment as their herd mates.

Animals receiving the same treatment will have the same access to feed e.g., supplements or the feed available because of stocking rate, and the same energy outputs e.g., walk the same distance to the milking parlour and be on the same milking regime as their herd mates. These are important differences that need to be accounted for when forming accurate contemporary groups used for animal evaluation.

The simplest way to record which animals were grazed or managed together is to record the mob, herd, or group of animals that were together at the time of the measurement (the herd management group).

Examples of liveweight weighing events and herd management groups growers of young stock

The two examples below illustrate herd management groups of young stock on contract to reach target growth rates with a grower (or grazier).

Example 1

Figure A2.1 shows a farm with three herd management groups (mobs, or groups of animals) for a particular contracted owner. The animals from each contracted owner are separated to reduce the risk of disease transfer. However, this owner's animals are also grazed as three separate groups, two of the groups are formed because of their age and stage of growth and thus their different energy requirements, and the third group of animals is of a similar age, but they are lighter and require more feed to reach their target weight.

Within each herd management group, each animal has an equal opportunity to obtain energy inputs (the same access to pasture and supplements). They also have the same energy outputs when transferred between paddocks.

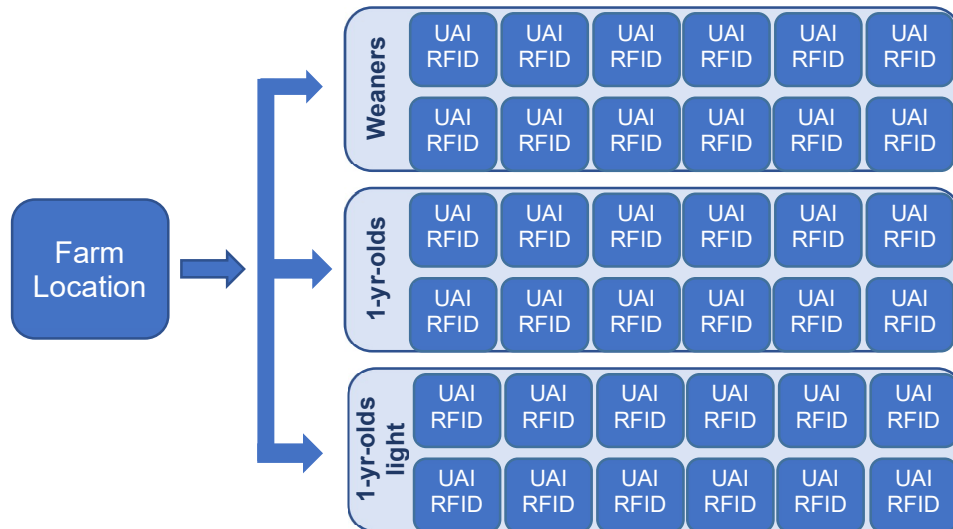


Figure A2.1. A farm with three groups of animals managed separately because of the energy required to meet their target growth rate. The animals all have the same owner (i.e. no animals from another farmer are included in the herds). Each herd is referred to as a herd management group. (Code: UAI – Unique Animal Identifier).

When a herd management group is weighed, all of the animals in the group need to be weighed during the same event or otherwise accounted for. Where more than one herd management group is weighed at a weighing event, the weighing session start and end time for each herd management group is used to identify them.

Example 2

Figure A2.2 shows a farm with three herd management groups (mobs, or groups of animals) on the farm. Like the previous example, two of the groups are formed because of their age and stage of growth and thus their different energy requirements, and the third group of animals is of a similar age, but they are lighter and require more feed to reach their target weight. However, in this example, the animals from each contracted owner are not kept separately from other owners' animals.

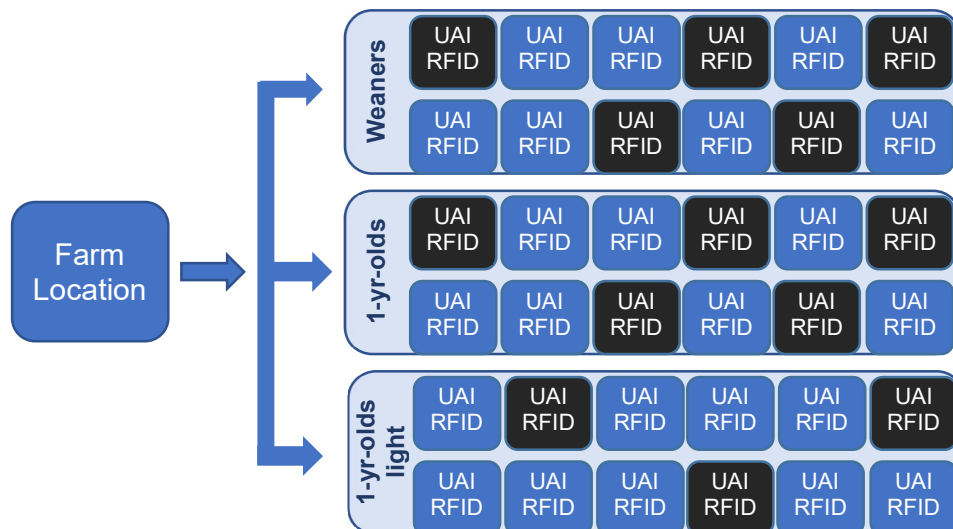


Figure A2.2. A farm with three groups of animals managed separately because of the energy required to meet their target growth rate. The animals have different owners represented by the different colours. Each herd is referred to as a herd management group. (Code: UAI – Unique Animal Identifier).

Assuming the grower intends weighing all of the animals in the herd management group regardless of owner, they need to be weighed at the same event. Each herd management group is recorded as a separate weighing session using the start and end time of their weighing session to define the herd management group. The data are then submitted as a weighing session by participant code.

Lactating cows

The two examples below illustrate scenarios for weighing events for herd management groups containing lactating cows:

- a contemporary age group or a TOP inspection subgroup; or
- all of the animals at the farm location.

The examples use two farms with each farmer managing two herds at the same farm location.

Example 1

Figure A2-3 shows a farm with two herd management groups (mobs, or groups of animals) on the farm. In this example, all of the two-year-old animals graze together and form a herd management group. Each animal has an equal opportunity to obtain energy inputs; they have the same access to pasture and supplements (both in the paddock, and in the milking parlour where in-shed feeding is available). They also have the same energy outputs i.e. the same walking distances to the milking parlour and the same milking regime (once daily, twice-a-day, or variable milking).

The balance of the lactating animals on this farm are in the main herd and form the second herd management group. Each animal in the main herd also has an equal opportunity for energy inputs and outputs as their peers.

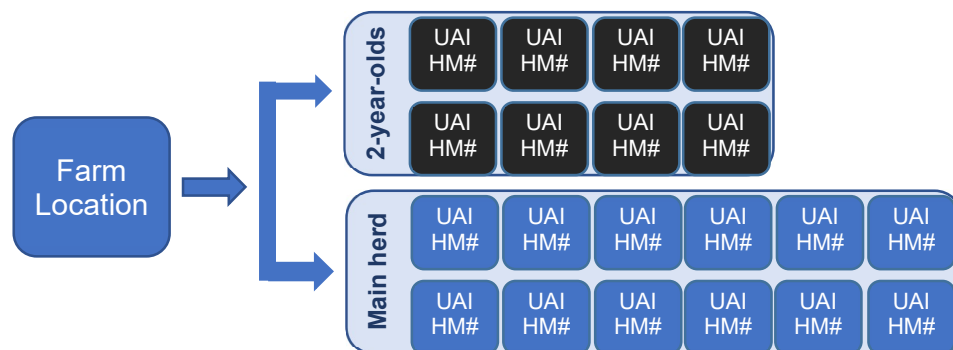


Figure A2.3. A farm with two herd management groups. The two-year-old animals are in one group (black colour) and the other lactating animals (main herd) are in the other group (blue colour). (Code: UAI – Unique Animal Identifier, HM# is the herd management number).

If the weighing event covers a contemporary age group or a TOP inspection subgroup, where all the two-year-old cows are weighed are in a single herd management group, the herd management group can be identified using the start and end time of the weighing event.

If the weighing event includes all of the lactating animals at the farm location, herd management groups are required to identify the different groups. In this example, there are two herd management groups. The options for identifying them are:

- Assign a sequential herd management group number to each group. For example, the two-year-old animals could be assigned to herd management group number 1 and the animals in the main herd to herd management group number 2. The assigned herd management group number can then be recorded for each cow in the group with its weight. Or
- The weighing event can be recorded in two sessions. All of the two-year old animals can be weighed as a single event. The start and end time for the weighing session would define the herd management group. Similarly, the weighing session start and end time for the main herd would define their herd management group.

Note: If a herd management number is used to record a weight, it is mandatory to link the animal to a Birth ID or NAIT RFID number to be able to access the animal durable key to submit data to the DIGAD.

Example 2

Figure A2-4 shows a farm with two herd management groups (mobs, or groups of animals) on the farm. In this example, each herd management group has animals with a mixed age range.

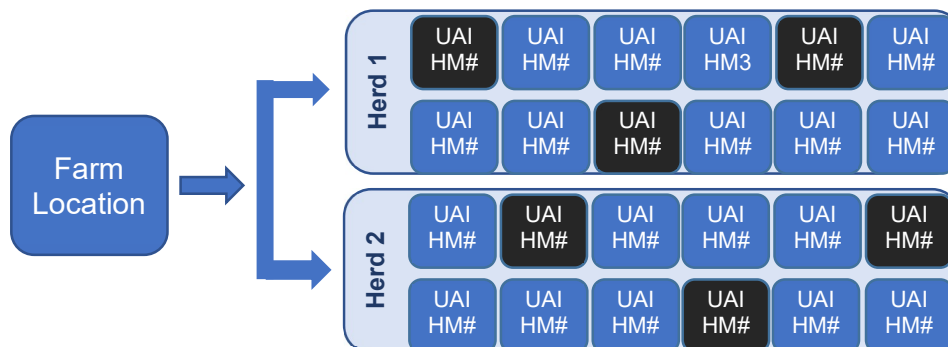


Figure A2.4. A farm with two herd management groups with mixed aged and two-year-old animals (identified as black) included in each herd. (Code: UAI – Unique Animal Identifier, HM# is the herd management number, black colour two-year-old animal, blue colour animals older than two years old).

If the weighing event is a contemporary age group or a TOP inspection subgroup, as the two-year-old cows are in separate herds (i.e. Herd 1 and Herd 2), herd management groups are required to identify the different herds the two-year-old animals were in as they are drafted for the weighing event. For example, the two-year-old animals from Herd 1 could be assigned herd management group number 1 and the two-year-old animals from Herd 2, herd management group number 2. The assigned herd management group number is recorded for each cow in the group with its weight.

If the weighing event includes all of the lactating animals on the farm, herd management groups are required to identify the different groups. In this example, there are two herd management groups. The simplest way of defining each herd management group is to complete the weighing event in two sessions i.e. Herd 1 and Herd 2 separately. The start and end time for each weighing session will define each herd management group.

Note: If a herd management number is used to record the weight, it is mandatory to link the animal to a Birth ID or NAIT RFID number to be able to access the animal durable key to submit data to the DIGAD.