Weighing Systems for Heifers

This Infosheet covers:

- Uses of liveweight records.
- Determining the best frequency and timing of weighing.
- The components of a suitable weighing system.
- The factors that affect weighing accuracy.

Key points

- Liveweight change is the only objective measure of dairy heifer performance.
- Heifers should be weighed regularly, ideally every 4 to 8 weeks.
- The more frequent the weighing, the earlier action can be taken if heifers are not meeting their growth targets.
- The weighing conditions should be similar each time, including time of day and gut fill (food and water).
- Gut fill can account for up to 22% of a ruminant’s liveweight, so it can have a big impact on weighing accuracy.

Using liveweights

Liveweight change is the only objective measure of dairy heifer performance. Liveweight targets, based on the expected mature liveweight, are used to monitor heifers’ performance. Appropriate weighing systems/scales are essential to gather weight data and the process needs to be accurate to support good decision-making.

Liveweight records can be used to:

- monitor progress towards target weights,
- calculate growth rates,
- monitor feed allocation,
- help calculate future feed requirements,
- indicate the health status of animals,
- calculate appropriate dose rates for drenches and minerals,
- support the calculation of a fair grazing fee,
- monitor performance when grazing off-farm, and
- compare actual performance with the targets, e.g. defined in a grazing agreement.
Weighing systems vary in sophistication. The best use electronic identification (EID) tags to electronically record, store, and report the weight of each animal, while in-race platform scales, where weights are recorded with a pen and paper, may be sufficient if only a small number of animals are being weighed or more sophisticated systems are cost prohibitive. Regardless of the technology, weighing systems need to be set up to allow regular, simple, and accurate weighing, which will contribute to timely decision-making.

**FARMER VIEWPOINT**

Weighing systems help us identify that in the autumn, even though the grass looked like rocket fuel, the heifers weren’t gaining any weight. We think the dry matter was too low in the pasture.

Contract grazier, 1,250 heifers, Stratford, Taranaki

You just can’t look at heifers and say they are on target, you need to weigh them. I don’t measure feed intakes for the heifers, I go off the heifer weights to see if they’ve been fed enough.

Dairy farmer, 265 cows, Inglewood, Taranaki

Weighing is the only objective way to measure heifer performance. You can see why people wouldn’t want to weigh if they have poor facilities, for a lot of people they see it as a big outlay and they don’t realise the benefits.

Contract grazier, 1,000 heifers, Patea, Taranaki

**More information**

- For liveweight targets and selecting a mature liveweight, see Heifer Infosheets: Setting Weight-for-Age Targets and Selecting Mature Liveweights.

**Weighing frequency and timing**

Heifers should be weighed at least every 12 weeks, but every 4 to 8 weeks is considered good practice. It is more efficient to weigh whenever yarding is necessary, e.g. drenching or vaccinations.

Weighing heifers frequently is beneficial because it promptly highlights any issues, such as failing to meet expected growth rates, and allows earlier intervention. If younger heifers fall behind their required weight gain the longer the time lapsed the more difficult it is to get them back on track. This is because heifer calves grow proportionately faster during the period from birth to 22 months than at any other time. The fastest growth period is from birth to three months when calves will typically double their liveweight. It takes them another six months to double their liveweight again.
Weighing can be less frequent as heifers grow older, as they become less sensitive to low quality feed and the proportion of protein in their feed.

The key times for weighing are at:

- weaning,
- arrival or exit from a property,
- 12 months old, to check they are on track for achieving puberty before mating,
- the start of mating (as a management review), and
- 20 months old, to check they are on track to meet 22 month liveweight and body condition score (BCS) targets.

Grazing contracts should stipulate weighing expectations, reporting, and the actions expected to manage underweight animals.

**FARMER VIEWPOINT**

To make sure management interventions are having an effect for underweight heifers we go back and weigh them again in two weeks’ time.

Dairy farmer, 850 cows, Leeston, Canterbury

**More information**

- For more about moving heifers between properties, see Heifer Infosheet: Shifting Heifers Off-Farm.
- For liveweight targets, see Heifer Infosheet Setting Weight-for-Age Targets.

**Suitable weighing systems**

Suitable weighing systems are simple, follow a clear process, and use appropriate infrastructure. Stock should be handled calmly. The management of the process and the infrastructure are equally important.

Cattle are cautious in new situations and dislike excessive noise, dogs, aggressive behaviour, and electric prodders. Avoiding negative interactions will improve stock flow and reduce the weighing duration. Positive interactions with people will also aid heifer transition into the milking herd.

Timely decision-making is possible if you have the correct information (such as weight-for-age targets and minimum weights) available at the point of weighing so that you can identify any problems. Taking data away for analysis and re-yarding stock to address poor performance or at-risk animals is time consuming and delays action.

EID tags linked to electronic scales that can store animal information and weight data can provide calculations or alerts at the point of weighing, such as liveweight, weight gain, and historical weight data. The same calculations can be carried out manually but require some preparation prior to weighing. The information needed for this process includes:

- The number of days since the last weighing.
- The targeted weight gain and minimum weight gain.
- The required growth rates, and access to a quick reference chart e.g. $20 \text{ kg} \div 40 \text{ days} = 0.5 \text{ kg/day}$ (see an example in Figure 1).
- Records of each animal’s previous weight for reference during weighing.
Getting accurate weights

A similar process should be used for every weighing. There is no ideal method for weighing but the following key aspects should be consistent:

- **Time since feeding.**
  Suggested: weigh animals when they are full, 2 - 3 hours after fresh feed.

- **Time in yard.**
  Suggested: animals should spend no more than two hours in the yard. If they are away from feed for longer than they were at the previous weighing, view the results with caution.

- **Shifts in diet.**
  Suggested: avoid weighing soon after a change in diet. Animals can lose weight in the first week transitioning to a new feed and some forages, like lucerne and chicory, have been shown to influence weights through perceived differences in gut fill. This aspect is important if weighings are less than four weeks apart.

- **Accurate scales.**
  Suggested: check your scales by weighing a ‘known weight’ first e.g. a 25 kg bag of meal.
**Gut fill**

Gut fill can account for up to 22% of a ruminant’s liveweight, so consistency is important. The factors that influence gut fill are:

- water access and quality,
- feeding levels and supplement type,
- time since feed and/or water access,
- quality of feed and rate of passage e.g. higher quality feed is digested faster, and
- the effect of weather on feed intakes and utilisation.

Heifers grazed on forages have a fuller and thus heavier rumen than animals fed on concentrates.

Gut fill can decline by 40% and 60% respectively after being off feed for 12 and 24 hours. The higher quality feed, the more quickly gut fill will decline.

**Example of a weighing policy to ensure accuracy**

- Weigh at a similar time of day each time e.g. 10 am.
- Weigh animals when fed similar amounts of feed — avoid recent shifts to crops or supplements.
- Weigh animals as soon as they are removed from feed. The difference between weighing empty versus full animals is shown in Table 1.
- Keep weighing sessions, i.e. the time in the yards, as short as possible — maximum of 2 hours.
- Ensure access to adequate water prior to weighing — See Table 1 for the possible impact.

**Table 1.** An example of the difference between weighing empty animals (without water access), versus full animals (straight off a feed with water access) weighed 24 h later.

<table>
<thead>
<tr>
<th>Animal ID</th>
<th>Empty</th>
<th>Full</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>148</td>
<td>162</td>
<td>9</td>
</tr>
<tr>
<td>94</td>
<td>170</td>
<td>177</td>
<td>4</td>
</tr>
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<td>147</td>
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<td>6</td>
</tr>
<tr>
<td>159</td>
<td>154</td>
<td>170</td>
<td>9</td>
</tr>
<tr>
<td>168</td>
<td>138</td>
<td>150</td>
<td>8</td>
</tr>
</tbody>
</table>
Zeroing (tare)

Many scales zero themselves when they are turned on and the weight of the platform/crate is tared. However, if the scales do not return to zero, zero them before you start weighing, and after an animal is weighed. Also, during manual weighing, zero (tare) the scales regularly, to adjust for any build-up of dirt on the platform.

Other possible causes of inaccuracy

<table>
<thead>
<tr>
<th>From installation and use</th>
<th>From animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighing site not level</td>
<td>Animals touch or lean on a non-weighed part of the enclosure e.g. side of race</td>
</tr>
<tr>
<td>Weighing site very windy</td>
<td>Animals partially on platform</td>
</tr>
<tr>
<td>Platform is touching surrounding race work</td>
<td>1.5 animals on platform</td>
</tr>
<tr>
<td>Any restraining chains(binding) become tight (need to be slack)</td>
<td>Animal handling before weigh scales have stabilised</td>
</tr>
<tr>
<td>Dirt/stones build up under the platform</td>
<td>Next animal touching the gate or crate with its nose</td>
</tr>
</tbody>
</table>