Weaning Decisions

This Infosheet covers:

- The factors to consider before weaning, including:
  - rumen development
  - weight
  - age
  - ability to compete within a group.

Key points

- Rumen development is the most important weaning decision factor. Calves that are consuming less than 1 kg meal/day are not ready to be weaned.
- Rumen development is aided by supplying fresh water, a concentrate (calf meal) and pasture from an early age.
- Individual heifers need to reach a minimum weight prior to weaning, and this weight should not be used as an average for a group.
- Combined age and weight measures (e.g. 90 kg at 8 weeks) can be used to set a satisfactory weaning threshold.
- Calves need to be competing within the group before they are weaned.
Weaning calves

Weaning is the process of reducing a calf’s milk intake and moving it to a forage diet (pasture, lucerne, or herbs) and possibly concentrates (such as a grain-based meal). Once weaned, calves are no longer fed milk but may be fed concentrates.

Weaning is the first step on the path to becoming a fully functional ruminant.

Making sure a heifer is fully prepared before weaning reduces the chance she will need preferential treatment post-weaning. Preferentially managing small groups of animals to try and “catch them up” to the group is time-consuming and can be difficult to manage, so it is best avoided by good management early on.

Factors to consider before weaning

There are four factors farmers use when deciding if calves are ready to wean (see Figure 1). Is the calf:

- Consuming the desired amount of feed? Is its rumen sufficiently developed?
- Meeting its weight-for-age target, based on its breed and/or the rearing system?
- At the minimum age for the rearing system?
- Able to compete within a group?

Figure 1. The four factors to consider when deciding if a calf is ready to wean.

<table>
<thead>
<tr>
<th>Rumen Development</th>
<th>Weight</th>
<th>Age</th>
<th>Competing in group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed intake</td>
<td>Min weight-for-age.</td>
<td>Individual age.</td>
<td>Behaviour with group.</td>
</tr>
<tr>
<td>Cud chewing</td>
<td>Weight for milk system</td>
<td>Age for pen.</td>
<td>Competing for feed.</td>
</tr>
<tr>
<td>Rumen fill</td>
<td>Age vs. weight.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following aspects need to be considered: the chosen rearing system (high/low milk), available grazing, infrastructure, and any off-farm grazing agreements.
**Rumen development**

A calf’s rumen development is the most important factor to consider when making the weaning decision. The only way this can be assessed is by measuring the amount of concentrate or pasture they are readily eating, which should be at least 1 kg/day of meal or 2 kg/day of pasture.

Beef calves remain with their mother for four to six months which gives the rumen a longer period to develop and calves an opportunity to observe and mimic grazing. The aim for dairy calves is to quickly convert them from milk dependency to functional rumination. The dairy calf group feeding system where weaning occurs earlier, while efficient, shortens the time available for rumen development.

Calves should be supplied with clean water and feed for rumen development, for example, concentrates (grain-based calf meal) and/or high quality forage. Calf meal and high quality pasture provide the volatile fatty acids, as well as the crude protein necessary for rumen development.

Good quality hay can be used as a roughage if a grain-based meal is also being used, and should be offered from birth.

Concentrates will encourage early rumen development and the growth of the papillae on the rumen wall by increasing volatile fatty acids, especially butyrate. This increases the surface area of the rumen and its ability to absorb the end-products of digestion. Forages initiate rumination which adds saliva to the rumen to aid digestion.

Calf meals containing grain should be used to promote rumen development in accelerated weaning programmes, such as those with restricted milk feeding, or where calves are weaned before ten weeks of age. They produce higher levels of fatty acids than other feeds, such as pasture.

Calves given large quantities of milk will have slower rumen development. This is primarily because the milk satisfies their appetite, so they eat less forage and concentrates, which decreases the requirement for digestion in the rumen.

Any change to the quantity or type of feed needs to be measured. Just as it takes time to develop the rumen, time is key in transitioning from calf meal to a full pasture diet. Farmer experience indicates that two week gap between each diet change will help transition heifers to a full pasture diet.

New-born calves have the highest dietary protein requirements, this requirement declines as they age. Also, a higher crude protein intake should lead to higher growth rates. If using calf meal, look for products that contain 20% crude protein for calves on milk and 17% crude protein for weaned calves to meet total dietary requirements.

Nutritional guidelines for calves are indicated in Table 2, and these apply to all calf rearing programmes.

**Table 2.** Daily dry matter (DM) intakes, metabolisable energy (MJ ME) requirements, and concentrations of crude protein in the diet of calves with differing weights and growth rates¹.

<table>
<thead>
<tr>
<th>Calf weight (kg)</th>
<th>Liveweight gain (kg/day)</th>
<th>DM intake (kg/day)</th>
<th>ME (MJ/day)</th>
<th>% of crude protein (CP) in diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>0.6</td>
<td>0.9</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>55</td>
<td>0.8</td>
<td>1.2</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>70</td>
<td>0.8</td>
<td>2.0</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>90</td>
<td>0.8</td>
<td>2.5</td>
<td>30</td>
<td>17</td>
</tr>
</tbody>
</table>

Once weaned, animals can be transitioned from a pasture/meal combination, if required, to a full pasture diet. However, if an animal does not thrive post-weaning they may need continued access to calf meal or, regardless of weight or age, a veterinarian assessment.

**Weaning weight**

Individual heifers should reach a minimum weight prior to weaning, and this weight should not be used as a group average. The type of rearing system will affect the target weaning weight. For example, it should be higher for calves that are reared on high milk systems without meal access.

Reaching a minimum weight is an important milestone for a heifer as it indicates that they are ready to transition from individual to group management and that group weight-for-age targets can now be applied.

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**FARMER VIEWPOINT**

*Use weigh scales to assess weaning weights.*

Some of our dairy farms use weigh bands for weaning and the weigh bands are useless. The lightest “weaned” heifer we were sent was 65kg on the scale.

*Contract grazier, 1,200 heifers, Mossburn, Southland*

I always thought I was an awesome calf rearer, but we were weaning too light using the weigh band. Now we target 90kg for crossbred heifers weaned off milk and eating meal and then 100-105kg for the heifers to finish on meal.

*Dairy farmer, 265 cows, Inglewood, Taranaki*

We used to wean by eye and by age but we found our eye just wasn’t accurate enough, now we weigh to wean (85kg for Crossbred) and use age (8-10 weeks). We never wean calves earlier than 8 weeks, regardless of weight.

*Dairy farmer, 225 cows, Palmerston North, Manawatu*

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**Weaning age**

Some farmers use a combination of weight and age as a “rule of thumb” when making the weaning decision. To use this in practice, for example, a minimum age of 8 weeks and weight of 90 kg might be set for weaning, if a heifer is 90 kg at 7 weeks then another week needs to pass because “she’s too young to be off milk”.

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**Competing within a group**

Heifers need to be competing with the group before they are weaned. Any that aren’t should be held back until they are.

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**FARMER VIEWPOINT**

Do not send small animals off to contract grazing. We wean our Jersey calves at 90-100kg in early November and the little calves are kept at home. You can’t expect a grazier to get a silk purse out of a sow’s ear.

*Dairy farmer, 360 cows, Hawera, Taranaki*
More information

- For more about rumen development see the NZ Calf Rearing website, Calf Rearing Fact Sheet 3.5: Feeding: Rumen Development http://nzcalfrearing.com Calf rearing information can be found at www.dairynz.co.nz/calves
- General calf rearing information and different feeding systems can be found in DairyNZ Facts and Figures, p. 42 – 44 www.dairynz.co.nz/facts-and-figures
- For more about heifer nutrition see Heifer Infosheet: Dairy Heifer Nutrition.
- For more about the nutritional composition of pasture see DairyNZ Facts and Figures, p.21 www.dairynz.co.nz/facts-and-figures
- For more about younger and lighter calf management see Heifer infosheet Younger and Lighter Calf Management.