



Information Sheet

THE BENEFIT OF CREEP FEEDING INFANT LIVESTOCK DESPITE HAVING AD-LIB MILK AND PASTURE

The primary objective of creep feeding is to promote early rumen development in infant calves and lambs to have the ability to convert pasture, other forages, and supplements into nutrients they can utilise. They are not born with this ability.

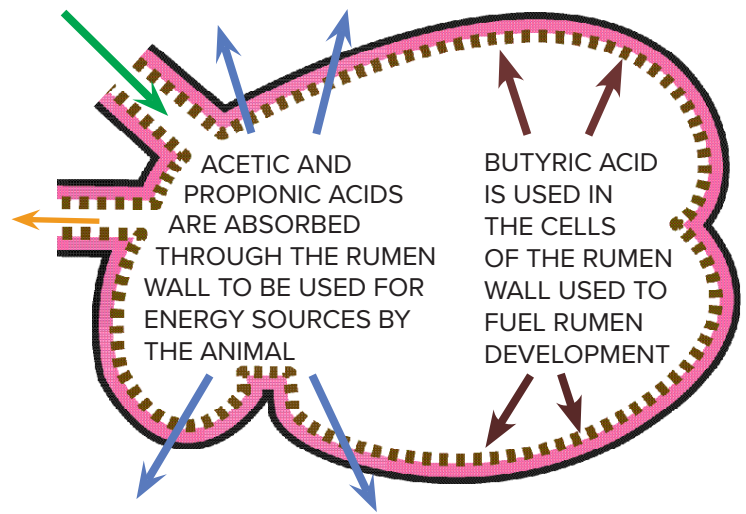
As pasture is the most cost-effective feed source, once the rumen is developed, livestock can absorb nutrients from this feed source, leading to prompt growth in a cost-effective manner. Done correctly, supporting pre-ruminants to make an early transition to become a ruminant is a very profitable exercise.

The transformational process

Infant ruminants are born as a pre-ruminant with undeveloped and sterile rumens. Within a few days of birth, the young pre-ruminant begins to develop a population of microbes. The quantity and types of bacteria are determined by the environment and types of solid feed the animal eats.

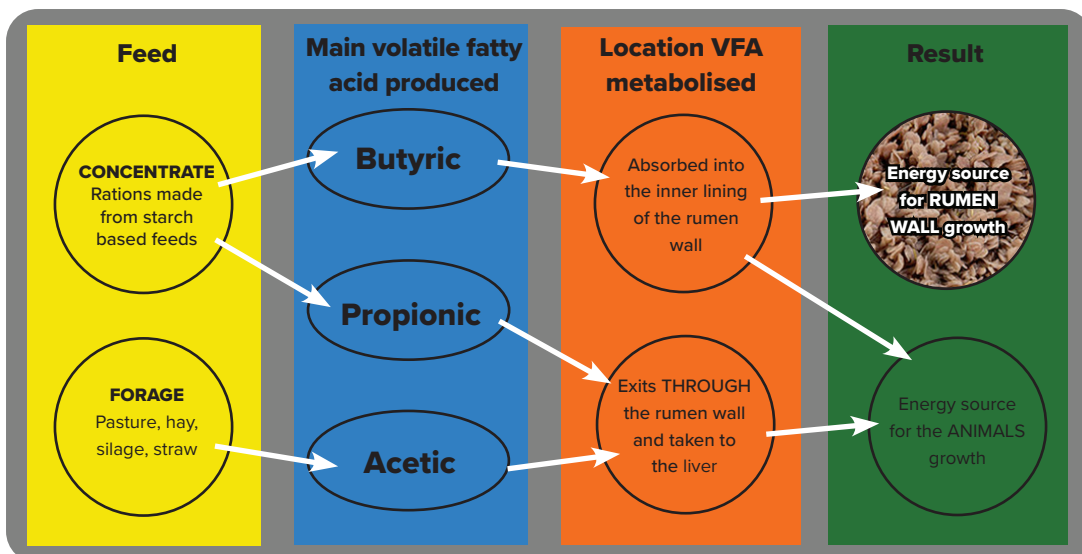
When solid feed and water enters the rumen, the anaerobic (absence of oxygen) environment of the rumen, provides a perfect place for bacteria to grow, digest and utilise the feed consumed. As these bacteria grow and metabolise nutrients, they produce volatile fatty acids. The primary volatile fatty acids produced in the rumen are acetic, propionic, and butyric acids.

Suitable creep feed rations contain carbohydrates in the form of starch. The bacteria that digest starch produces large amounts of propionic and butyric acids. When feeds high in fibre are fermented, the primary end product is acetic acid.



Acetic and propionic acids are absorbed through the rumen wall and are taken up by the blood and pass through the liver to be made into metabolites that can be used for energy sources by the lamb or calf. Importantly, butyric acid is not absorbed through the rumen wall, and the cells of the rumen wall have an alternative metabolic process that allows butyric acid to be converted into an energy source for use by the cells in the rumen wall. *Source: Heinrich J 2019, Penn State University*

Thus, butyric acid produced in the rumen primarily provides energy for growth of the rumen wall. Acetic and propionic acids provide energy for the animal, part of which is shared to the rumen wall, but overall compared to butyric acid, much less acetic and propionic acids are used to fuel rumen development.



Butyric acid is the game changer. It provides energy for growth of the rumen wall. High starch feeds need to be provided to enable a fast transition for pre-ruminants



1. FED MILK ONLY

2. FED MILK AND HAY

3. FED MILK AND GRAIN

STARCH BASED FEEDS LEAD TO PAPILLAE GROWTH

The internal surface of a developed rumen is covered with tiny projections, papillae, which increase the surface area of the rumen and allow better absorption of digested nutrients. The image above shows the rumens of three different calves at the age of 6 weeks that have been fed three different rations. Fig 3. shows that dramatic change to the productive capacity of the rumen wall because of adding grain to the diet of a young calf.

Source: Penn State University

EXPECTED ADDITIONAL GROWTH RATES

Experiments have showed the additional growth rates of creep feeding (when the ration is no more than 200g per day for lambs and 800kg per day for calves) compared to young livestock that were not creep fed:

- Fraser 42g per day for lambs
- Advantage Feeders experiment 44-59g per day over 5 groups of lambs (avg. of 54g per day)
- Leaver 44g per day for lambs
- Wedge 0.28kg per day for calves
- Cooper 0.17kg per day for Wagyu calves

Note: Feed conversion also depends on the genetics of the livestock and other available feeds.

Visit www.advantagefeeders.com.au/trial-results for full results.

It is common for creep feeding to lead to 20-25% faster growth

AVOID PULPY KIDNEY ISSUES

Pulpy kidney is a potentially fatal disease that most commonly occurs in rapidly growing unweaned or weaned lambs and calves, on lush pasture or grain. Creep fed lambs and calves are at a higher risk of pulpy kidney because they grow faster than those that do not receive any creep feed.

Pulpy kidney can be prevented by maintaining a vaccination program. An important component to the program is to provide a booster injection to the maternal livestock in late pregnancy as they will pass on temporary immunity, via the colostrum, which will protect lambs and calves until they are marked, and they receive their first vaccination.

EXPECTED FEED CONVERSION FROM CREEP FEEDING

Feed conversion

The most important factor for feed conversion is the type of feed. Our experiments have showed that:

- Cracked grain mixes have had feed conversions between 2.6 and 3.9
- Pellet and grain mixes have had a feed conversion of 4.0
- Whole grain feeds can have feed conversions between 4.0 and 5.2

The more expensive feeds have generally had the better feed conversions, however, due to the price of the ration, a better feed conversion won't necessarily return a higher profit

THE DURATION OF CREEP FEEDING

Commencement

The sooner after birth, the faster the transformation of the rumen. However, if the feed offered to young livestock isn't consumed fast enough, the ration in the feed access area can become stale and unattractive, reducing feed intake. Balancing these two countering factors, it can be best to put creep feeders out with lambs when median age lamb and calf is 2 weeks of age.

Note: If maternal livestock are being supplementary fed with feeders for a period into lactation, a compromise is often made to start creep feeding later than explained above once the maternal livestock can stop being fed. See the "Training young livestock to consume starch diets at a young age" section on page 6.

It is often best to start creep feeding 2 weeks after the median lambing/calving date in a mob

Completion

It is common for creep feeding to finish at weaning. Rumen development can be achieved before weaning however the high efficiency of feed conversion that is commonly achieved before weaning means that is quite profitable to continue creep feeding until weaning.

Please note that:

- Using feeders to supplement livestock with dry feed can precede this application. See the *Dry Feed Supplementation Information Sheet*
- When weaning coincides with the spring flush, managing excess protein with weaned livestock can follow this application. See the *Managing High Moisture Pasture Information Sheet*



INFORMATION SHEETS

THE BEST FEEDS FOR CREEP FEEDING

There are many factors that go into choosing the best creep feed ration. Consult a livestock nutritionist or farm consultant for expert advice.

There are however, two characteristics that all creep feeds require:

1. Adequate starch: Advantage Feeders experiments have used a range of feeds with different starch contents. The lowest starch content feeds (40% of DM) have showed to have excellent rumen development and growth rates. We can conclude from this that a starch content above a minimum of 40% should produce enough butyric acid for a prompt rumen transformation.
2. The feed needs to flow unimpeded
 - 100% pellet rations can cause clogging issues in a humid environment because, with the minute intake of infant livestock, the pellets can stick together. However, 50% of pellets with 50% of grain has showed to work very well
 - Depending on the ingredient composition, high protein pellets, in a grain mix, may be sorted out by the livestock. In a humid environment, they may also break down easily and impede flow
 - In Advantage Feeders experience, cracked grain mixes have showed to work sufficiently with the proviso that the feed access area is cleaned on a weekly basis



CALCULATING THE ADDED PROFIT FROM CREEP FEEDING

WANTING TO TRY OUT THE CALCULATORS FOR YOURSELF?

Visit our website
www.advantagefeeders.com.au/roi/creep-feeding



START CREEP FEEDING EARLY AND AVOID ACIDOSIS

Without creep feeding, the rumen will slowly develop. If creep feeding commences close to weaning (example: from 10 weeks of age for lambs and 20 weeks of age for calves), adding grain to the diet in an ad-lib amount can cause acidosis.

New born lambs and calves begin life with a sterile rumen that cannot initially convert feed into volatile fatty acids and lead to the potential of acidosis. If starch based feeds are offered to very young stock, their rumen microflora is accustomed to this feed and it significantly reduces the risk of acidosis. It is best to commence creep feeding when lambs and calves are 2 weeks of age.

SETTING THE UPPER AND LOWER ADJUSTERS FOR THE COMMENCEMENT OF CREEP FEEDING

Pre-ruminant lambs and calves should be offered an ad-lib ration. The Upper and Lower Adjuster should each be set at a minimum of position 6. The Adjuster Guard should not be used and placed in its storage location under the weather shield.

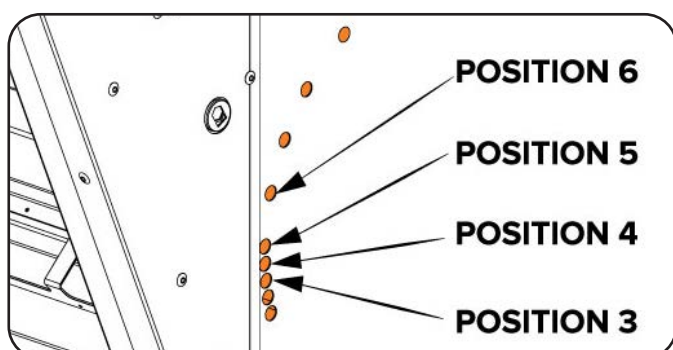
Depending on the flow of the feed, the Upper and Lower Adjuster can be opened further however, avoid feed flowing into the trough. Livestock prefer fresh feed so if the trough fills up too much and the livestock do not consume this, the feed can be wasted.

Pre-ruminants begin life with a sterile rumen that avoids issues with feeding starch based feed

POSITIONING THE CREEP GATES AND CREEP PANEL AT THE COMMENCEMENT OF CREEP FEEDING

The Creep Panels should start on Position 3. Once lambs start tugging to get their heads out from under the Creep Panel, open this to Position 4. This commences when lambs are approx. 10 weeks of age. Once tugging starts, there is generally a fortnight before they can not tug hard enough to get their head out.

The horizontal bar on the Creep Gates should be positioned at the height of the back on the largest calf. As calves increase in size, move the bar up.



THE RECOMMENDED FEEDING AMOUNT

Pasture is one of the cheapest sources of feed. To ensure profit isn't reduced from creep feeding, ensure that livestock don't excessively substitute relatively expensive feed (the creep feed ration) for their cheap feed (the pasture).

There appears to be a lack of scientific experimentation to specify the varying results gained from feeding a range of creep feeding quantities. Our experiments and the results from clients that are creep feeding have consistently showed profitable results when creep fed:

- An average of 150-200g per day for lambs over the whole creep feeding period. Another way to do it is to offer ad-lib creep feed until they consume 200g per day and restrict it to that level until weaning. It is common for this to happen when lambs are 6-8 weeks of age.
- An average of 600-800g per day for calves over the whole creep feeding period. Another way to do it is to offer ad-lib creep feed until they consume 800g per day and restrict it to that level until weaning. It is common for this to happen when calves are 12-16 weeks of age.

Control the ration of lambs once consumption reaches 200g per day and calves at 800g per day

Note: The most profitable quantity of creep feed offered to livestock will also depend on high quality pasture being available to the young livestock. The ration amounts specified above are for situations where the young livestock have lush and vegetative pasture freely available.

Monitoring feed intake of pre-ruminants that are being creep fed is very important because their intake can increase fast over a short period when lambs are approx. 8 weeks of age and calves are approx. 16 weeks of age



LIVESTOCK PER FEEDER WHEN CREEP FEEDING

It is recommended to livestock 200 lambs or 50 calves per feeder. Like all applications, the number of livestock per feeder can be increased but it increases the risk of uneven consumption because there is more competition for trough space. The increase in risk requires more oversight/management to identify a potential unevenness in feed consumption.

200 lambs per feeder
50 calves per feeder

CONTROLLING THE RATION TO ACHIEVE THE DESIRED INTAKE

The 3-way Restriction System can comfortably restrict feed intake to 200g per day for lambs and 800g per day for calves.

Experiment

The Advantage Feeders experiment showed that setting the Upper and Lower Adjuster at position 3 and not utilising the Adjuster Guard, the ration could be controlled to 250g per day just prior to lambing. Closing the adjusters more and implementing the Adjuster Guard would achieve considerably lower daily consumption.



THE DIFFERENT OUTCOMES OF CREEP FEEDING AND IMPRINT FEEDING

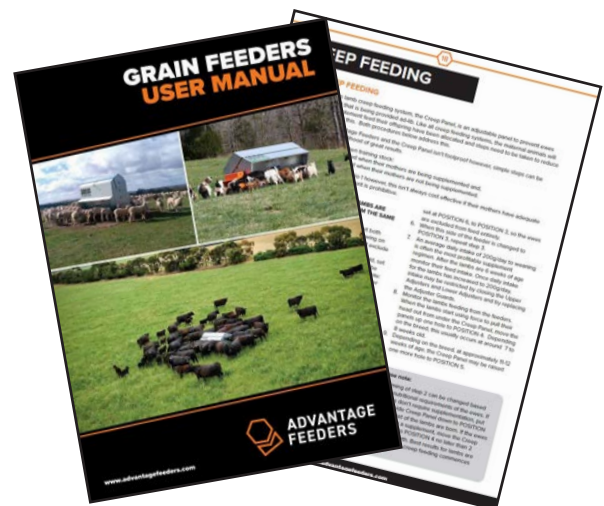
Creep feeding and imprint feeding both before young livestock are weaned from their mothers. For this reason, the techniques are easily confused with the terminology intermixed.

Imprint feeding is the process of having maternal livestock (ewes and cows) train unweaned livestock to supplementary feed. This process is commonly done for 2-4 weeks and commences 2-4 before weaning up until the point of weaning. The purpose of imprint feeding is to have weaned livestock familiar and experienced with supplementary feeding for when this reintroduced, perhaps 2-3 months after weaning.

Please note that creep feeding will also achieve the objective of imprint feeding and an addition benefit gained from creep feeding.

SETTING UP THE FEEDERS FOR CREEP FEEDING

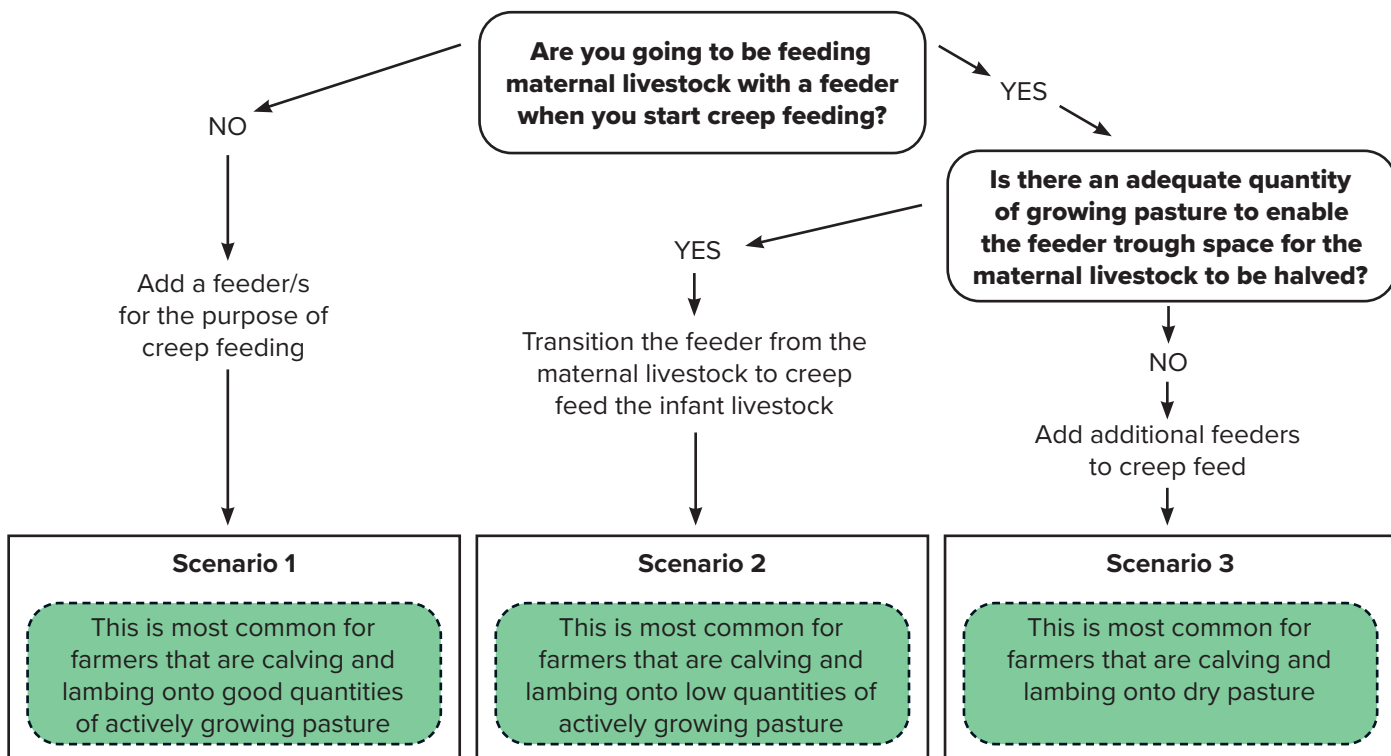
For the full explanation, see pages 18, 19, 20 of the Advantage Feeders User Manual, which can be downloaded from our website.



USER MANUAL

TRAINING YOUNG LIVESTOCK TO CONSUME STARCH DIETS AT A YOUNG AGE

The methods of training pre-ruminants vary depending on the varying scenarios that are facing the maternal livestock.



SCENARIO 1: TRAINING PRE-RUMINANTS WHEN MATERNAL LIVESTOCK ARE NOT USING A FEEDER

This scenario requires the most amount of effort. To ensure consistently great results, do the following:

1. Put milk powder over the feed access area, in the trough and around the feeder. You may have to do this 3 times per week for 3 weeks.
2. Put the feeder in a position in the paddock that livestock will be passing frequently.
3. Provide a mineral lick to the maternal animals next to the creep feeder.
4. If forage is being supplied to the maternal animals, place this next to the creep feeder.
5. For calves, put high quality forage in the creep gate area.

SCENARIO 2: TRAINING PRE-RUMINANTS WHEN MATERNAL LIVESTOCK CAN BE TRANSITIONED OFF THE FEEDER

Assuming the maternal livestock are visiting the feeder regularly, at the commencement of creep feeding, lower one Creep Panel or one Creep Gate and, on that side, change the adjusters to an ad-lib setting. In this position, maternal livestock will access one side of the feeder and the young livestock will access the other.

Once maternal livestock no longer need to be supplemented, provide more trough space to the young livestock by setting the remaining side of the feeder to creep feed.

The steps in Scenario 1 that are convenient can also be followed.

In a sheep situation, lower the Creep Panels to Position 6 when lambing commences to have the ewes train the lambs to put their head under this panel.

Note: The 800HD has a division panel in it. Unless you are using this feeder, the feed being used to supplement the maternal livestock will be the same as the creep feed for the infant livestock.

SCENARIO 3: TRAINING PRE-RUMINANTS WHEN MATERNAL LIVESTOCK CAN NOT BE TRANSITIONED OFF THEIR FEEDER

Assuming the maternal livestock are visiting the feeder regularly, place the creep feeder next to the feeder that is being used to supplement the maternal livestock.

The steps in Scenario 1 that are convenient can also be followed.

In a sheep situation, lower the Creep Panels to Position 6 when lambing commences to have the ewes train the lambs to put their head under this panel.