



NRM Calf Rearing Guide

Rearing your calves for profit



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Introduction

Calf rearing sets the foundation for the lifetime productivity of your animal. Doing it well will give you the best chance to have a profitable animal.

Many farmers have their own unique approach to calf rearing with successful outcomes. This booklet discusses the 'once-a-day' and 'twice-a-day' system recognised as being widely accepted calf rearing practices.

However, whatever system you use or have developed to fit your own circumstances, all calf rearers have the same common goal - to rear the best calves possible.

The purpose of this booklet is to promote the key principles and goals of calf rearing;

1. Ensure the calf gets the right start in the first 3 days
2. Rumen development is maximised
3. Target weights attained as cost effectively as possible

For the beef farmer, larger, faster growing calves will reach slaughter weights earlier and arrive at slaughter dates heavier. Dairy farmers with bigger heifer calves will maximise size and condition at first calving, leading to improved fertility and higher milk production. The financial benefits are obvious.

The key point to remember when raising calves is that damage done in the first weeks of life can seldom be undone, setting back your investment for life. During this guide we will discuss the challenges faced and give tips to rearing calves profitably.



Calf selection and transport

The selection of calves to be reared is critical to success. It is important to consider various factors, such as its breeding - which will influence the potential of the calf and whether it is intended for dairy beef or as a milker.

Select calves

- That are five days old and are a minimum of 40kg
- That have been fed sufficient colostrum
- With dry umbilical cords
- That are bright and alert
- That are not sick or lame
- That are not induced
- That are not twins
- From as few sources as possible

Following these rules will avoid raising calves that are handicapped from the start, as they will always tend to be poor doers and lag behind their age group.



Transportation of calves

Care should be taken when transporting calves. There should be sufficient room for all the calves to lie down in transit, preferably on hay, sawdust or a soft mat, with minimal draught. This will reduce stress, bruising, overheating and the chance of any animals contracting infection.

Weigh the smallest calves beforehand to enable checking weights on arrival. To minimise weight loss in transit, educate carriers about low stress handling techniques.

Avoid overfeeding calves prior to transporting and feed them with a product such as Biopect to assist calves under stress.

Make sure resources are adequate for the arrival of new calves.

Caring for calves

Calves should be kept dry and draught free

Calves are susceptible to the chilling effects of wind and rain and it is recommended that they are kept indoors for the first 3 weeks. Cold calves will use most of their energy keeping warm rather than growing. The growth rate of sheltered calves is 20% higher than calves exposed to the elements. A calf shed should be twice as deep as it is high or wide - this will ensure shelter for the calves at the back of the shed no matter how wet and windy the conditions. Ideally calves will get some sun and avoid the prevailing wind.

Some rearers use calf covers to keep out the wind and rain. These can be very effective. Better quality covers are probably more cost-effective, as they will last longer and fit better. Calves can have a tendency to get lice under their covers, so if this occurs treat accordingly.

Disinfect regularly

Prior to the arrival of each batch of calves the shed should be thoroughly cleaned and disinfected with a broad spectrum disinfectant like VirkonS. Pens should be frequently disinfected while in use to prevent build-up of disease organisms. VirkonS is ideal for this task because it kills all bacteria, fungi and viruses, and is perfectly safe to use with feed, water and the calves present. It is best applied by knapsack to enable treatment of difficult to reach areas.

Adequate manure disposal system

The flooring/bedding needs to facilitate easy cleaning and removal of waste. The calves should not be directly on concrete as it tends to become wet and slippery and also encourages the spread of bacteria through the barn. Ideally waste should not drain away from one pen through another - this can also spread disease.

Many farmers have calves on slats or grating. These surfaces will need to be hosed down frequently (in the absence of calves) and remember - beware of draughts! Untanilised shavings or sawdust spread on the floor, 300mm or more deep, works well. Raked and topped regularly it will absorb waste which can be removed at the end of each season.

Segregate age groups and no more than 10 - 12 calves per pen

While indoors the calves should each have at least 1.5m² of space per calf. They should not be run in mobs of more than 10 - 12 per pen. Keep calves in groups according to size, and away from adult cattle especially. This applies to calves outdoors as well. This will minimise bullying and stress - relaxed calves will be healthier and grow faster.

Caring for calves

If the calves are held indoors continuously for a period there should be no mixing of animals from different pens. Calves isolated due to ill health should not be returned to their original mob but put in a new pen - this will reduce the chance of spreading disease.

Same calf feeding routine each day

Ideally the same person should be involved every day - the calves will be more comfortable getting into a routine, especially over the first few days. Whoever looks after the calves must have plenty of time to do the job properly. It is essential that the feeding, cleaning and animal health requirements of the calves are fulfilled adequately, and problems are not overlooked or put off.

Bring milk to calves

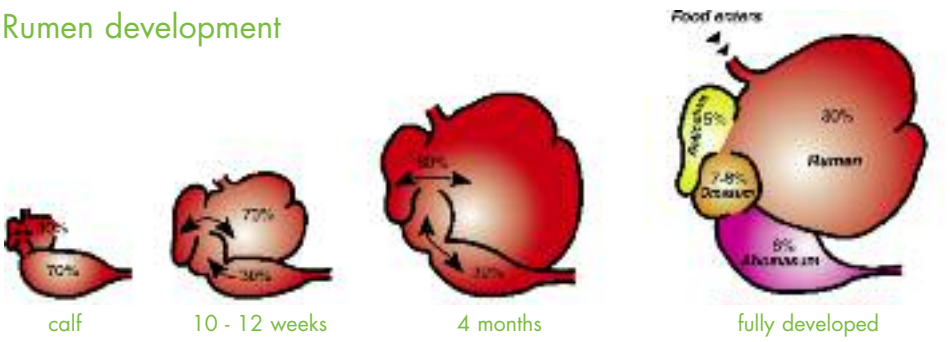
Quiet handling will reduce calf stress - avoid overuse of dogs when shifting mobs. Where practical, bring the milk to the calves, not the other way around - the calves will be more relaxed and more likely to drink their share.

Provide clean air and water

There should be good ventilation to remove effluent gases (ammonia) and prevent outbreaks of pneumonia. Remember no draughts at ground level. This is easily checked by use of a match or lighter.

Make clean water available to the calves at all times, especially when calves are scouring. When dehydrated, calves will drink anything so avoid calf access to stale, rank water, which may be harmful.

Rumen development



Nutrition and rumen development

How the rumen works

The mature cow has four stomach compartments, and as a ruminant is able to digest feeds such as grass, silage and concentrates.

Feed passes initially into the first stomach, the rumen, which is essentially a large fermentation vat. Billions of micro-organisms (bacteria, protozoa and fungi) act on the food in conjunction with spells of "chewing the cud", breaking it down so it can be digested. Some of the feed products are absorbed through the rumen wall, while other feed residues, plus a proportion of the microbes, pass into the following stomachs for further digestion.

The rumen is a very important part of the adult cow's digestive tract, making up 80% of the total volume.

Rumen development

In contrast, the newborn calf is pre-ruminant. All four stomachs are present but the rumen is underdeveloped initially so the fourth stomach (abomasum) makes up 70% of the total volume. When milk is ingested the sucking action causes the closure of the "reticular groove", a fold of muscle in the rumen wall. This results in the milk by-passing the first three stomachs and entering the abomasum directly, where it can be efficiently digested.

Solid food on the other hand does not stimulate the closure of the reticular groove, and therefore passes into the rumen (the first stomach), beginning a journey of digestion through the four stomachs.

The rumen develops from a very small organ in the new-born calf (1 - 2 litres) to the most important part of the gut (25 - 30 litres) by 3 months. Given the right feeding strategy, and feed products, the rumen can enlarge quickly in the first few weeks of life.

As the calf ages and grows the rumen becomes larger, developing a microbial population for effective digestion and becoming a more significant proportion of the total stomach volume. Meanwhile the abomasum loses importance, falling from 70% to 8% of stomach volume over the same period.

This development is critical, allowing an animal to adapt itself to a pasture-based diet - but it takes place gradually. Rumen development only occurs by the stimulation of the regular entry and digestion of solid feed into the rumen.

Early feed intake and rumen development is the key to successful calf rearing and important to attain optimum growth rates around weaning.

Monitoring growth

Growth checks

The post-weaning check in growth found in many calves is due to three factors:

1. Low intakes of dry feed up until weaning will result in limited rumen development. This will result in a check in growth for about two weeks or so while the rumen becomes accustomed to digesting significant quantities of dry feeds
2. High intakes of roughage such as grass and hay are bulky or low in dry matter. Calves are physically unable to eat enough roughage to sustain rapid growth weights with a small developing rumen
3. Calves stress when feeds are changed. Use feeds with the NRM Moozlee feedlink to minimise problems

The best way to avoid a growth check is to use a concentrate feed before, during and after weaning until the calf is able to do well on grass alone.

If a growth check does occur, the lost growing time will never be made up - it will take longer to attain target weights.

NRM Moozlee feedlink

The NRM Moozlee feedlink is a key initiative by NRM to reduce the risk of checks in calf growth.

The flavour found in NRM Moozlee is included in all NRM calf feeds to ensure feed intake is maximised when a change of feed occurs.



The NRM Moozlee feedlink system

Disease management

Navel infections

Infections of the navel cord can occur within the first 24 hours after birth due to overcrowding and bruising.

Infection spreads from the navel cord to the liver, and then the joints of the leg. 'Joint ill' symptoms include a hot navel cord and swollen painful joints which make it difficult for the calf to walk.

Treat with 5mls of penicillin for at least five days, or seek veterinary advice.

Navel infections can be prevented by giving calves plenty of room and soft bedding while transporting them, and spraying the navel cord with iodine.

Scours

There are two types of scours - nutritional or infectious:

Nutritional scours occur when too much unclotted milk enters the small intestine, due to stress, overfeeding or use of an inferior milk product.

To prevent scours don't overfeed, especially new arrivals, and make diet changes gradually. Feed Biopect or Calfcare to aid in maintaining normal gut health when calves are exposed to stressful situations and likely to contract scours.

Infectious scours may be caused by bacteria (e.g. E-Coli, salmonella), protozoa (e.g. cryptosporidia, coccidiosis), or viruses (e.g. corona, rotavirus). Affected calves should be isolated because this type of scour is contagious.

Treatment for scours is similar whatever the cause. Stop feeding milk and replace with an electrolyte solution (salts, dextrose for energy, and water for dehydration).

Feed up to 8 - 10L per day of electrolyte in 4 - 5 feeds (2L/feed) to assist the calves recovery.

Re-introduce milk gradually with Biopect to prevent further scouring. Infectious scours caused by bacteria may require additional antibiotic treatment. Consult your vet if chronic scours persist.

Calf Pneumonia

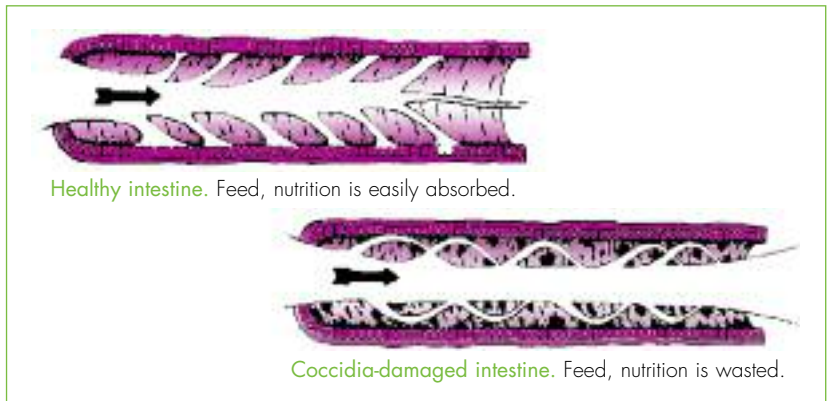
Poor ventilation and a build-up of ammonia gas can cause Pneumonia. The best prevention is good ventilation, otherwise antibiotics may be required to prevent lung damage and death.

Disease management

Coccidiosis - bloody scours

Coccidiosis is a disease caused by tiny parasites, which rupture the lining of the intestine. Their eggs (called oocysts) are everywhere - i.e. calf sheds, barns and even pastures. Once oocysts infect a calf, they can reproduce and spread rapidly. Worst cases develop bloody scours but it is estimated that 95% of infected calves don't show obvious signs of coccidiosis. This low level infection can affect intakes and feed conversion, causing reduced growth rates. Feeding an anti-coccidial to all calves from a very early age will halt parasite development and prevent further damage enabling calves to build up natural immunity (which may take up to 140 days). All of NRM calf feeds contain an anti-coccidial to ensure protection against the coccidia parasite.

Intestine comparison



Worms and parasites

Calves should be on fresh, leafy pasture ahead of the herd, and shifted frequently to minimise worms when they are grazing. Drenching for worms should commence 14 days after weaning and continue 3 weekly, depending on the conditions. Lice should also be monitored and treated as required. Lice can be prevalent in calves which wear covers and need to be checked accordingly.

Blackleg and leptospirosis

Calves may need to be vaccinated against blackleg and leptospirosis depending on local conditions. Contact your veterinarian for advice.

Importance of colostrum

It is critical all calves receive colostrum within the first few hours of their birth.

Calves which receive inadequate or no colostrum have higher mortality and lower growth rates.

Colostrum - the first 3 days

From birth to 3 days old, calves are extremely vulnerable to infection. Colostrum needs to be given to the calf for the first 12 to 72 hrs of life. Colostrum carries anti bodies and Beta-carotene from the mother which wards off infection and therefore should continue to be fed until days 3 - 4.

Calves should be fed 10% - 15% of their bodyweight in two feeds before the first 12 hours. From birth, the ability for colostrum immunoglobulins to cross from the intestine into the blood stream decreases. By 24 hours after birth, immunoglobulin absorption has ceased. Colostrum should continue to be fed until 72 hours old because colostrum will protect against disease by fighting infections within the gut.

Milk feeding and developing the rumen - day 4 to 6 weeks

Whether you use whole milk or milk prepared from calf milk replacers (CMR), calves will grow better when fed milk at a temperature of around 40°C. Calves don't thrive as well when fed cold milk as this requires more energy than warm milk which could be used for growing.

Ensure smaller calves get their fair share, watch for bullying, and ideally group slow drinkers together. Quiet handling and a consistent routine will relax calves so they will be more likely to drink their share.

Avoid overfeeding, which can cause nutritional scours.

Whole milk versus calf milk replacer (CMR)

Whole cow's milk doesn't contain added vitamins and minerals or an anti-coccidial for the prevention of coccidiosis. When using whole milk consider adding a supplement like Bovatec to provide coccidiosis protection and improve growth rates.

Due to many years of selective breeding, whole milk now contains a much higher percentage of fat and protein than calves received in the wild. CMRs have a lower percentage of fat and protein than whole milk as they are specifically designed to meet the nutritional requirements of young calves. In countries where CMRs and whole milk are a similar price many farmers prefer a CMR because of the addition of vitamins, minerals and anti-coccidial treatment.

Whey powders

Comparison of traditional casein and alternative whey CMRs

Lately there has been major changes in products available with alternatives to traditional CMRs. Traditional CMRs are based on downgrade milk powders from the NZ dairy industry. Since the dairy industry has now improved their processing capabilities less downgrade powder is available for use in CMRs.

This shortage has resulted in traditional CMRs being more expensive. This is something European and US rearers have faced since the 1970's and has resulted in the successful development of alternative whey based CMRs.

Whey facts

High quality whey based CMRs are based on consistent blends of proven high quality ingredients.

NRM Power Whey CMR trials show that calf performance is equal to that of other traditional casein based CMR products available in New Zealand.

High quality whey based CMRs such as NRM Power Whey reduce the incidence of scours compared to traditional casein based CMRs.

NRM Power Whey CMR is rapidly digested and does not require curding resulting in a major reduction in scours (up to 50% reduction based on European research).

A key influence in the reduction of scours is the consistent quality of ingredients. Nutritional scours can be triggered by inconsistent blends of milk powders and damaged or downgraded ingredients. The casein in traditional milk powder can be heat damaged affecting curding ability and increase the risk of scours.

High quality whey based CMRs such as NRM Power Whey are absorbed in half the time of traditional casein based CMRs.

Calves achieve earlier concentrate (e.g. NRM Moozlee) intakes as whey protein is digested faster. Early concentrate intake (up to 13% greater intake from 0 - 42 days) leads to faster rumen development and earlier weaning.

NRM's Power Whey CMR has premium ingredients especially formulated for young calves from day 4.

Ingredients are specifically selected for 4 day old calves. Only highly digestible, palatable proteins are used. Extra vitamins, prebiotics, probiotic and organic acids are added to assist in enhancing disease resistance.

Whey powders

Four common myths

MYTH: Whey and vegetable proteins cause more scours.

FACT: Research shows the high quality proteins used in CMRs such as NRM Power Whey actually reduce the incidence of scours.

MYTH: Soya proteins and vegetable oils are not suitable ingredients for CMRs.

FACT: NRM Power Whey is manufactured using only proteins and oils proven to be suitable for calves from day 4. It is true, however, that some vegetable proteins and oils may not be suitable for calves.

MYTH: Traditional casein based powder is superior to whey based proteins.

FACT: The performance of both high quality traditional casein based and whey based CMRs are very similar. However, NRM Power Whey CMR has faster rumen development and less scours when fed with calf feed.

MYTH: Whey based CMR can only be used as a 'finisher' milk replacer.

FACT: NRM Power Whey CMR is a premium CMR specifically developed for feeding calves from day 4.



NRM Power Whey (Approximate on a DM basis):

Crude Protein:	23%
Crude Fat:	20%
Lactose:	38%
Crude Fibre:	<0.2%
Moisture:	4%

NRM Power Milk (Approximate on a DM basis):

Crude Protein:	Min 26%
Crude Fat:	Min 20%
Lactose:	35%
Moisture:	<4%

Milk replacers

NRM Power Whey

NRM Power Whey is a premium CMR specifically formulated to be fed to calves from day 4. It contains a precise and proven blend of whey proteins, vegetable proteins, and highly digestible vegetable oils. Fortified with vitamins and minerals for optimal growth, NRM Power Whey contains prebiotic, probiotic and organic acids to enhance disease resistance. NRM Power Whey does not contain an anti-coccidial.

Ingredients:

Flavouring and free flow agents, hydrolysed wheat protein, minerals, nutritional emulsifier, prebiotic, premium whey proteins, premix containing vitamins, probiotic and organic acids, quality vegetable oils, soy protein concentrate.

NRM Power Milk

NRM Power Milk CMR is a brand new premium whey and casein CMR blend specially formulated to be fed to calves from day four. It contains 26% protein and 20% fat. It is also scientifically formulated with quality casein and whey proteins which produce a consistent curding CMR with some of the benefits of whey CMR's (lower scouring / high feed intake).

Feeding Recommendations for NRM Power Milk and NRM Power Whey:

Age	Once-a-day feeding - volume per feed	Twice-a-day feeding - volume per feed
0 - 4 days	Colostrum fed ad-lib	Colostrum fed ad-lib
5 - 10 days	125 - 150g per litre of water 2L feed twice-a-day (total 4L/day)	125 - 150g per litre of water 2L feed twice-a-day (total 4L/day)
11 - 21 days	600g per 2.5 litres of water 2.5L feed once-a-day (total 2.5L/day)	125 - 150g per litre of water 2.5L feed twice-a-day (total 5L/day)
22 days to wean	600g per 2.5 litres of water 2.5L feed once-a-day (total 2.5L/day)	125 - 150g per litre of water 3L feed twice-a-day (total 6L/day)

Milk replacers

Mixing:

Add 125 - 150g of NRM Power Whey with water to make up 1 litre. Add the required amount of powder to half the volume of hot water (45°C - 55°C) and mix vigorously for 1 minute. Top up with water to the required volume so that the milk replacer is fed at 40°C - 42°C.

Feeding:

As a guide the calf should receive at least 10% of its body weight daily e.g.. a 40kg calf requires 4 litres (4x125g/L) of milk replacer per day. For fortified once-a-day feeding systems the milk replacer powder may be fed in a reduced volume of water (refer to table). For best results feed NRM Moozlee, ad-lib from day 5.

In periods when calves are stressed (e.g.. disease recovery, environment) NRM recommends using a higher rate of NRM Power Whey. Add up to 150g/L in twice-a-day feeding or 700g/2.5L in once-a-day feeding.

Jersey Calves are best fed on a twice-a-day regime of 125-150g/L until weaning.



Quality dry feeds

Palatability, tastes good and smells good

Early feed intake is higher if a more palatable feed is made available to calves.

Research shows that growth rates and rumen development in calves relate to absolute intake.

Molasses, steam flaked grains, and roughage are key ingredients which improve palatability (NRM Moozlee is heavily molassed and contains both steam flaked grains and lucerne chaff).

NRM calf feed products contain the unique Moozlee flavouring. Moozlee is widely regarded as the best tasting calf feed on the market (refer to Moozlee feed system, page 19).

Digestible

The steam flaking of grains improves product digestibility over pellets for young calves. Compared with pelleting, steam flaking uses higher temperatures to process the grains producing grains which are more gelatinised and more digestible in the undeveloped rumen of a calf. The quality of the ingredients used can also affect digestibility. NRM calf feeds are made with the highest quality ingredients available.

Be careful when purchasing a product on 'specification' because what the calf may utilise may be quite different.

Fibrous texture

Fibre in dry feeds provides 'scratch factor' to assist in rumen development and stimulates saliva which assists in maintaining the optimum pH level in the rumen.

Good quality roughage is important but beware if free access to roughage is offered to calves they may reduce their intake of concentrates. Buy a dry feed with the right level of roughage included to prevent this problem.

NRM Moozlee and Ready Rumen contain measured amounts of quality roughage, eliminating the need for free access to roughage and improving early intake of feed.

Concentrated, high dry matter feed

Dry feed must be a concentrated source of essential nutrients because of the small capacity of the developing rumen.

Some silage based feeds have a dry matter of only 50% compared with concentrates at around 85%. Don't be fooled by a cheaper price, the nutritional requirements of the calf will not be met and you are paying for expensive water. All NRM feeds have a minimum of 85% dry matter.

Quality dry feeds

Balanced specification, and anti-coccidial

The maximum protein a calf can absorb is 20%. This is dependent on consumption so a more palatable product may only need 18% protein.

Calf diets are most often designed to meet the optimum protein required and energy is balanced to utilise this protein. 12MJ ME/kg of dry matter will provide enough energy to utilise the protein in a 18 - 20% feed. Added vitamins, minerals and an anti-coccidial (Bovatec) are also beneficial. Bovatec helps fight coccidiosis and also enhances the beneficial bacteria population in the rumen so that calves get more out of the feed they eat.

NRM calf feeds maintain the 'right balance' of nutrients as well as added vitamins, minerals and an anti-coccidial.

Quality checklist

3 High dry matter

3 Tastes good

3 Smells good

3 Fibrous Texture

3 Firm pellet/nut

3 Balanced ingredients

3 Anti-coccidial



NRM Moozlee



NRM GrowUP



NRM Ready Rumen

Feeding systems

What feeding system to use?

There are several different early feeding systems used successfully by farmers, twice-a-day versus once-a-day, ad-lib versus restricted.

When the performance of different feeds across early feeding systems is studied there is one common conclusion. A quality feed will out-perform an inferior feed in any system.

System comparison

Twice-a-day feeding system	Once-a-day feeding system
Higher milk usage: 22kgs of CMR	Lower milk usage: 18kgs of CMR
Lower dry feed usage: 72kgs of meal	Higher dry feed usage: 76kgs of meal
Withdraw dry feed at 84 days	Withdraw dry feed at 70 days
Higher labour costs: 2 milk feedings per day	Lower labour cost: 1 milk feeding per day
Lower capital cost: Housed for 2 weeks	Higher capital cost: Housed for 5 - 7weeks
Lower animal health risk: More natural, lower stress to calf	Higher animal health risk: Milk deprivation, increases stress to calf
Lower management: Outside rearing, less intensive farming	Intensive management: Indoor rearing, intensive farming, increased biosecurity risk, increased need to monitor and manage individuals

Therefore, calf rearers should feel free to select the feeding system that fits in with the other things happening on their farm. But when it comes to the choice of feed to use in your system, invest in quality.

NRM Moozlee

NRM Moozlee feed system: NZ's most popular textured feed starter for high feed intake and rapid rumen development.

NRM Moozlee is the ultimate premium calf feed and NZ's first textured calf feed.

NRM Moozlee is a high quality, highly nutritious and easily digested calf feed specially formulated to give calves the head start they need to reach their full potential.

NRM Moozlee is the most palatable, feed for rumen development in the young calf.

Twice-a-day	125 - 150g of NRM Power Milk or NRM Power Whey with water to make up 1L	NRM Moozlee	Target weight
Day 0 - 4	colostrum	ad-lib	40kg B/W min
Day 5 - 10	2L twice-a-day	ad-lib	
Day 11 - 21	2.5L twice-a-day	ad-lib	
Day 22 - wean	3L twice-a-day	ad-lib	28 days = 50kg
Day 50 - 66			66 days = 75kg
Day 67 - 84			84 days = 100kg

Wean off milk gradually at 65kg minimum weight or when consuming 1kg of NRM Moozlee per day.

- Moozlee feedlink for enhanced palatability and early feed intake
- Highly digestible steam flaked grains for early rumen development
- Early rumen development leads to rapid growth and early weaning
- Bovatec® for coccidiosis prevention

NRM Moozlee Analysis

(Approximate on a DM basis):

Crude Protein:	Min 18.0%
Crude Fibre:	Max 10.0%
Crude Fat:	Max 5.0%
Salt:	Max 2.0%



NRM GrowUp

NRM GrowUp feed system: Cost effective protein pellet/nut feed system for rapid growth.

The NRM pelleted calf feed system comprises of a high protein 20% feed and a 16% finisher feed for cost effective supplementation in once-a-day and twice-a-day feeding systems.

Twice-a-day	125 - 150g of NRM Power Milk or NRM Power Whey with water to make up 1L	NRM GrowUp 20%	NRM GrowUp 16%	Target weight
Day 0 - 4	colostrum	adlib		40kg B/W min
Day 5 - 10	2L twice-a-day	adlib		
Day 11 - 21	2.5L twice-a-day	adlib		
Day 22 - wean	3L twice-a-day	adlib		28 days = 50kg
Day 50 - 66			adlib	66 days = 75kg
Day 67 - 84			adlib	84 days = 100kg

Introduce NRM GrowUP 16% Finisher at 50 days and feed ad-lib through to 84 days.

For once-a-day and twice-a-day feeding systems: Wean off milk gradually at 65kg minimum weight or when consuming 1kg of NRM GrowUP 16% Finisher per day. When consuming 1.5kg of NRM GrowUP 16% Finisher wean off milk completely. Continue to provide NRM GrowUP 16% Finisher at 1 - 1.5kg/calf/day for 1 - 2 months after weaning from milk. These recommendations are a guide only.

NRM GrowUp 20% Analysis

(Approximate on a DM basis):

Crude Protein:	Min 20%
Crude Fibre:	Max 10%
Crude Fat:	Max 5%
Salt:	Max 2%

NRM GrowUp 16% Finisher Analysis

(Approximate on a DM basis):

Crude Protein:	Min 16%
Crude Fibre:	Max 10%
Crude Fat:	Max 5%
Salt:	Max 2%



NRM Ready Rumen

NRM Ready Rumen feed system: Unique once-a-day pellet and straw feed system for rapid growth and convenience.

NRM Ready Rumen provides the New Zealand calf rearer with a unique feed, designed for the once-a-day feed system. It contains a measured blend of high quality barley straw and concentrated feed pellets.

It is a convenient way to provide these two essential ingredients to the growing calf and promote early rumen development. A cost effective feed designed to develop the rumen as early as possible, providing roughage as well as concentrate.

Once-a-day	NRM Power Milk or NRM Power Whey - volume per feed	NRM Ready Rumen	Target weight
Day 0 - 4	colostrum	ad-lib	40kg B/W min
Day 5 - 10	125 - 150g per litre of water 2L feed twice-a-day (total 4L/day)	ad-lib	
Day 11 - wean	600g per 2.5 litres of water 2.5L feed once-a-day (total 2.5L/day)	ad-lib	28 days=50kg
Day 50 - 66		ad-lib	66 days=75kg
Day 67 - 84			84 days=100kg

- Balances straw and concentrate to standardise intake of energy and roughage
- Stabilises rumen environment to reduce risk of acidosis resulting from high concentrate intake
- NRM Moozlee feedlink for high palatability
- Bovatec included for coccidiosis protection
- Early rumen development and liveweight gain
- 20% protein pellet

NRM Ready Rumen Pellets Analysis (Approximate on a DM basis):

Crude Protein:	Min 19.0%
Crude Fibre:	Max 10.0%
Crude Fat:	Max 5.0%
Salt:	Max 2.0%

NRM Ready Rumen Straw Analysis (Approximate on a DM basis):

Crude Protein:	Min 4.1%
Crude Fibre:	Max 42.1%
Crude Fat:	Max 1.36%
Salt:	Max 1.1%



NRM Animal Health

VirkonS: Protect calves against disease.

VirkonS is proven to kill disease agents on-farm, even hardy pathogens such as rotavirus and salmonella in calf shed environments.

VirkonS is so effective and rapid acting that it is the disinfectant of choice for controlling exotic disease outbreaks internationally (e.g.. UK 2001 foot and mouth disease outbreak).

Safe

Unlike most disinfectants, VirkonS does not use glutaraldehyde which is chemically related to formaldehyde and shares the same dangers. VirkonS is fully effective against all 18 families of viruses known to man - in addition to bacteria and fungi.

Calf Disease	Disease type	Research proving VirkonS is effective
Rotavirus	Virus	yes
Coronavirus	Virus	yes
Salmonella	Bacteria	yes
E-Coli	Bacteria	yes



Biopect: Avoid Calf Scours.

Biopect is a feed supplement containing pectins and other fibres from dried fruit and potato pulp, body salts and energy. Feed Biopect to aid in maintaining normal gut health when young animals are exposed to stress such as transportation, dirty or new environments, change in diet, or other situations where animals are likely to contract scours.

Special Features and Benefits:

- Avoid scours during times of stress
- Can be added to milk - avoid costly weight loss
- Natural - no antibiotics or sulphonamides - no with holding period

Feeding Recommendations:

- Feed 25g Biopect added to 2L of milk or reconstituted calf milk replacer
- Dose rates can be doubled if required



NRM Calfcare: Prebiotic calf food for better returns.

NRM Calfcare is a new-generation prebiotic product that stimulates the growth and activity of beneficial bacteria.

Prebiotic foods are increasingly used in calf rearing internationally with the following outcomes:

- Increase in natural production
- Reduction of feed costs
- Reduction of infective diseases
- Increase in health, appearance and condition

NRM Calfcare has been proven in Massey University 2004 study:

- 23.6% increase in weight gain
- 24% increase in feed efficiency

Feeding Recommendations:

- Add 20g NRM Calfcare per calf per day
- Premix NRM Calfcare with a small volume of warm water and add to CMR or whole milk and mildly agitate
- Feed NRM Calfcare for the duration of the whole milk or CMR program
- NRM Calfcare is best fed warm
- Best used within 1 hour of mixing
- Reseal bucket after use
- Store in a dry place
- Protect from vermin



For further information visit our online nutritionist at www.nrm.co.nz

