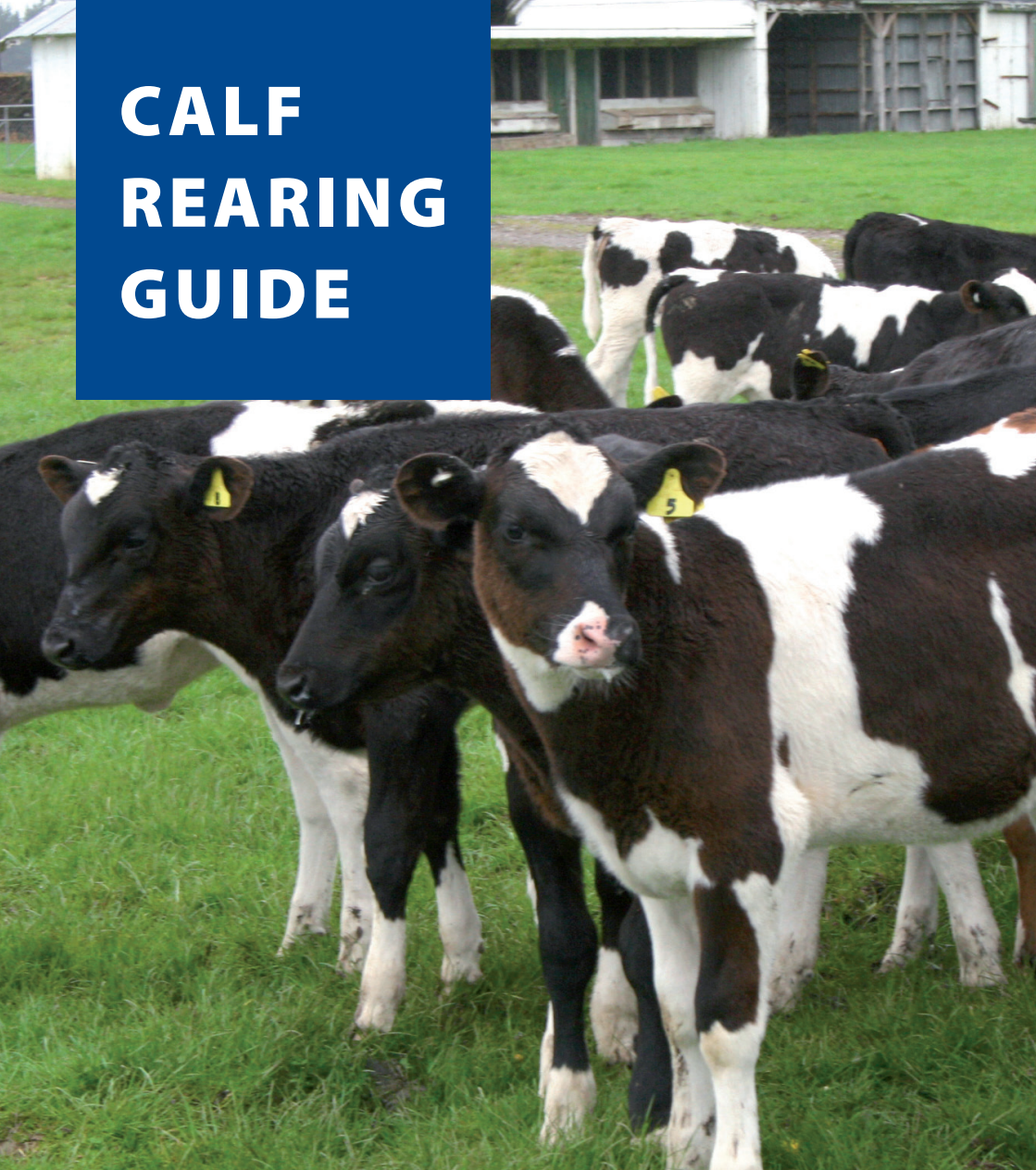


CALF REARING GUIDE



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RELIANCE FEEDS

You can rely on Reliance

All you need for calf feed



When it comes to calves, you can rely on us. Reliance supplies a range of quality calf milk replacers and calf feed for improved growth and health of your calves. Talk to us today about how you can get better results.



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Goals for Calf Rearing

How calves are reared will set the tone for the lifetime productivity of the animal; well-reared calves will be an asset to the herd.

Whether rearing calves for heifer replacements or beef animals, goals are similar:

- To produce quality replacement heifers that become high producing cows, and will last over time in the herd.
- To grow beef animals to target weights faster and in better condition so they achieve slaughter dates earlier, or on time, at better weights.
- To do both in a way that is cost effective.

The following graph shows the goals for growth rates of calves and the impact on reproductive performance. This is important as it provides an indication of how successful the overall calf rearing system will be and if the above goals will be reached. To get the most out of this graph it is essential that calves are weighed regularly to monitor growth rates.

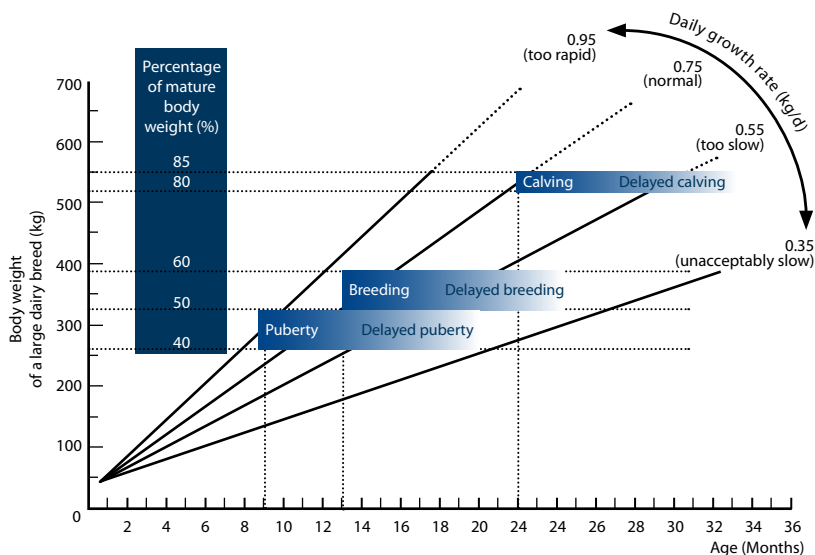


Figure 1: Heifer growth rates and reproductive performance (source: Babcock Institute)

Calves today are tomorrow's herd, so it makes economic sense to give them the best possible start to life by using the best calf rearing techniques, and top quality feeds. This booklet will help explain how to provide both.

Calf Selection

Selection of calves is important as it determines how successful the calf rearing operation will be.

Use the following guidelines when choosing calves:

- *Buy good quality stock from a reputable farmer.*
- *Calves should be four to five days old and at least 40 kilograms in weight.*
- *No navels are infected – check for swollen navels.*
- *Calves appear strong, bright and healthy – ears should be alert and not drooping and the eyes not sunken as this indicates dehydration.*
- *Are not lame – check for sore/swollen joints.*

Make sure you ask the following:

- *They have been fed sufficient colostrum (at least four litres in the first 10 hours after birth).*
- *Not twins.*
- *Have not been induced.*

Following these guidelines will mean that sick and poorly calves are avoided from the start. These will only cost money and reduce the overall profitability of calf rearing.



Calf Transport

When transporting calves there should be adequate space for each animal to lie down, and ensure there is a protective covering over the floor. This will keep the calves warm and reduce the risk of injury. During transport calves should also be protected from wind chill. This will ensure they are kept as warm as possible. The less stress calves have during transport, the healthier they will be on arrival.

On arrival calves should be placed in pens according to size; place the smallest and weakest calves in the warmest pens. Allow time for the calves to de-stress and feed only electrolytes for the first 24 hours. If calves are not stressed on arrival they can be fed two feeds of electrolytes before being fed milk or milk replacer.

Housing

Young calves are born with very little fat reserves to use to keep warm, so they are susceptible to the effects of wind and rain. Calves should be sheltered inside for at least three to four weeks after birth as cold, wet calves will put their energy into staying warm, rather than growing. This means increased costs for feed and calf health, as well as increased calf mortality. To get the most out of calves it is essential that they are provided with good housing.

The following can be used as a guideline for calf shelters:

- *A barn with separate pens is necessary. Allow one pen per 10 to 12 calves and allocate a sick pen or pens, depending on the size of the herd.*
- *Pens must be dry, draught free and get good daylight.*
- *Pens should be constructed with three solid walls using sheet metal or untreated ply.*
- *One end should be open for good ventilation and to allow the removal of gases and ammonia from urine.*
- *The open end should face leeward and north for sunshine.*
- *Each pen should be twice as long as it is wide to allow calves to move to the back to get out of the wind or rain.*
- *There should be adequate space per calf – allow 1.5 to 2m² per calf.*
- *Ideally the floor should be coarse gravel or sand, and have adequate drainage. To minimise spread of disease, drainage should not flow through other pens.*

- Bedding should be straw, untreated bark or sawdust, which should be spread over the entire floor in a layer that is 200mm deep. Bedding should not be raked or disturbed when it gets messy, but rather just add more on top.
- Commercial floor grating can be used but this will need to be cleaned regularly (without wetting the calves), and care will need to be taken with draughts.
- The barn, pens and bedding should be sterilised with a virucidal spray before calves arrive to kill any viruses. This should then be done every two weeks thereafter. The virucidal spray should be safe for calves. If in doubt please speak to your local vet.
- Keep birds from roosting in the barn as their droppings can cause disease (for example, salmonella).

Calves can be moved outdoors at three to four weeks old, but they should always have access to the calf barn or covered shelter overnight and on cold days to stay warm. Stop the calves from shivering by keeping them warm and dry. Friesian calves can start to shiver at 3°C when dry and 13°C when wet. For Jersey calves this can be around 8°C if dry and 18°C if wet.



Disease Management

1. Scours

There are two types of scours – nutritional and infectious.

Nutritional scours occurs when un-clotted milk enters a calf's small intestine due to stress, over feeding or poor quality milk or milk replacer.

To prevent nutritional scours calves should not be overfed, diet changes should be made slowly and good quality milk/milk replacers should be used. Calves should be fed at the same time each day by the same person; consistency is the key to reducing stress.

Infectious scours can be caused by bacteria (E-Coli and salmonella), protozoa (coccidiosis and cryptosporidia) and viruses (coronavirus and rotavirus). Always consult your veterinarian when calves start scouring to get scours diagnosed by laboratory analysis, rather than by scour colour; that way scours can be treated promptly and effectively.

The initial treatment for both types of scours is similar. Calves should be removed from milk and fed electrolytes. The electrolyte should provide the calf with energy and water and replace body salts that have been lost through scouring. Calves should be provided with eight litres per day in a number of small feeds. It is important to remember that calves die from dehydration and lack of energy, not the scours themselves.

With serious infectious scours medication prescribed by your veterinarian might be required in addition to electrolytes.

2. Coccidiosis

Coccidiosis is caused by protozoa that destroy the finger-like villi in the small intestine that absorb nutrients. The worst cases of coccidiosis will have bloody scours, but most calves won't have any visibly noticeable signs and will just have lower growth rates. Reliance calf feeds (excluding EconoCalf) contain the coccidiostat Bovatec® to aid in the prevention of coccidiosis. In at-risk situations it is a good idea to include a liquid form of Bovatec in the milk to aid in the prevention of coccidiosis until calves start consuming enough calf muesli/pellets. Milk replacers for young calves usually contain a coccidiostat, but not always.

3. Worms

When put on grass, calves should be on clean pasture to keep their worm burden low. De-worming should occur every three to four weeks from weaning through to winter.

4. Biosecurity and Hygiene

It is cheaper and easier to prevent disease, than cure it. The following is a guide to preventing disease:

- *Control the flow of people in and around the calf barn and only allow access to essential people.*
- *Keep visitors away from calf barns.*
- *Have dedicated equipment for the calf barn and ensure that it is kept clean. This includes wearing clean clothing and boots in the calf barn.*
- *Always wash hands with soap and warm water before and after handling calves, feed and feeding equipment.*
- *Keep sick calves in a separate pen away from the others.*
- *Have a spray programme in place with a safe, quality virucidal spray. To verify what brand or type refer to your local FarmCentre or vet.*
- *Situate the calf barn away from cows and dairy effluent. Cows can be carriers of disease, and it is important to remember that calves lack a fully developed immune system so they will become sick more easily than cows.*



Calf Husbandry

Calves should have a daily routine, with the same person feeding them every day. The calf rearer should be quiet and relaxed around the calves as quiet handling and routine will reduce the stress and they will be more likely to drink their share of milk. The rearer should have plenty of time to do their job and complete their daily checks as it is important that no part of the rearing program (feeding, cleaning or animal health) is overlooked.

In the first 10 hours of life the calf should have at least four litres of colostrum (two litres twice a day) and their navel sprayed with iodine. Check navels at three days and if the cord is bigger than the little finger then it will require veterinary attention.

Milk Feeding

1. Colostrum

It is crucial that calves receive colostrum after birth as they are born without an active immune system meaning they are highly vulnerable to infection. **Calves should receive 10% of their body weight of colostrum in the first 10 hours.**

Colostrum is important because it is a rich source of:

- *Fat and lactose - this provides energy as the newborn calf is born with low energy stores and poor insulation.*
- *Protein – for protein synthesis and muscle growth.*
- *Immunoglobulins (antibodies) provide passive immunity and help fight infection.*
- *Vitamins and minerals which provide high levels of vitamins A and E for health and immunity.*

Early feeding of colostrum is essential because when the calf is born its intestines are able to absorb the antibodies that are present in the cow's colostrum, but the cells mature rapidly and lose their ability to absorb these antibodies. After 24 hours only a small percentage will reach the calf's blood stream so will provide less immunity. The calf should receive colostrum quickly after birth to have the best chance of absorbing as many antibodies as possible. Tube feed calves colostrum if necessary.

Colostrum should be good quality, and from the first milking, as subsequent milk production contains lower antibodies and nutrients. The quality of colostrum is affected by the number of pregnancies the cow has had; older cows have been exposed to more infections than heifers and therefore have higher levels of antibodies in their colostrum.

A supply of frozen colostrum should be kept on hand for feeding when fresh colostrum is not available. Take care when thawing that it is done gradually. Overheating the colostrum will destroy the antibodies and supply lower immunity to the calf.

Colostrum should be good quality, fed in sufficient quantities and fed quickly. Without this passive immunity from colostrum, calves are much more susceptible to disease and the risk of mortality is increased.

Colostrum should be fed for the first three to four days after birth before changing to whole milk or milk replacer.

2. Reliance Milk Powders

It is essential that milk powder provided to calves is good quality. Milk powder should contain ingredients that have been selected for digestibility, solubility and stability for easy mixing in warm water, and optimum digestion by the calf. Most importantly the milk replacer formula must be palatable and meet all the nutrient requirements of the calf.

Reliance has a range of high quality calf milk replacers.

The Reliance Whey (see page 12)

Reliance Calf Milk Replacer (see page 13)

Reliance Milk Finisher (see page 14)



Calf Milk Specification Sheets

The Reliance Whey

THE RELIANCE WHEY premium milk replacer for calves is a full replacement of natural cows milk which can be fed to calves from four days of age. THE RELIANCE WHEY contains only quality ingredients with a high digestibility for the young calf.

THE RELIANCE WHEY CONTAINS:

- Organic acids and plant essential oils.
- A complete range of vitamins including choline, vitamin B-complex, A, D, E, K and C.
- A full range of trace elements (copper/selenium, cobalt, iron, manganese, zinc, iodine).
- Macro minerals (calcium, phosphorus, sodium, potassium).

These elements are included to ensure the young calves meet their daily essential nutritional requirements for early development and good growth.

The combination of organic acids and plant essential oils helps to establish a healthy gut flora, and stimulate the appetite and digestive system in the young calf.

Directions for use

Dissolve The Reliance Whey in half the required quantity of warm water at 50-55°C, while stirring. Add the other half of water (cold or warm) to achieve drinking temperature of 38-40°C.

Feeding Programme: Once a day system

| AGE IN DAYS | NO. FEEDS / DAY | LITRES / FEED | CONCENTRATION |
|--------------|-----------------|---------------|-------------------|
| 1 - 4 | 2 | 2 | Colostrum Only |
| 5 - 14 | 2 | 2 | 125 grams / litre |
| 15 - 28 | 1 | 2 | 250 grams / litre |
| 29 - weaning | 1 | 2 | 315 grams / litre |

Feeding Programme: Twice a day system

| AGE IN DAYS | NO. FEEDS / DAY | LITRES / FEED | CONCENTRATION |
|--------------|-----------------|---------------|-------------------|
| 1 - 4 | 2 | 2 | Colostrum Only |
| 5 - 14 | 2 | 2 | 125 grams / litre |
| 15 - 28 | 2 | 2.5 | 125 grams / litre |
| 29 - weaning | 2 | 2.5 | 175 grams / litre |

Ensure calves have adequate fresh, clean water and Reliance Calf 2000 or Start Mix available in their pens at all times.

Ingredients selected from

Whey Powder, Skimmed Milk Powder, Vegetable Oils/Fats, Soy/Wheat Proteins, Organic Acids, Essential Oils, Vitamins, Trace Elements and Minerals.

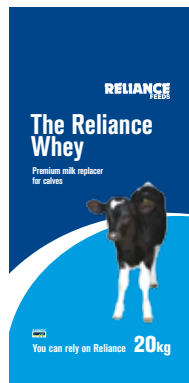
Typical Analysis (Per kg)

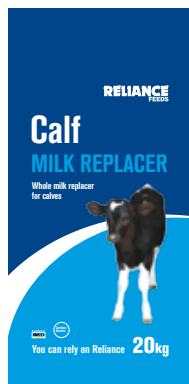
| | |
|----------------|-----------|
| Crude Protein | 23% |
| Crude Fat | 20% |
| Crude Ash | max. 9.5% |
| Calcium (Ca) | 1.2% |
| Phosphorus (P) | 0.9% |
| Lysine | 1.81% |

Micro-Ingredients (Added per kg)

| | |
|------------|-----------|
| Vitamin A | 30.000 IU |
| Vitamin D3 | 3.000 IU |
| Vitamin E | 50 mg |

Warning: This product contains selenium at 0.25 mg/kg. Do not exceed the stated dose and frequency. Do not use at the same time as any other selenised fertiliser prill or product without consulting a veterinarian or nutritionist. **Storage:** Store between 10-20 Celsius, clean, dry conditions. Do not expose to direct sunlight and avoid contact with floor and walls.





Calf Milk Replacer

RELIANCE CALF MILK REPLACER is an all milk powder blend providing excellent calf response to the natural food sources of milk fat, milk proteins and sugar.

Feeding Recommendations

Mixing ratio – 140g RELIANCE CALF MILK REPLACER to one litre of water
 Dissolve RELIANCE CALF MILK REPLACER powder in hot (not boiling) water.
 Mix to a creamy, smooth consistency and add cool water to make up the required amount.
 Feed at body temperature (38–40°C). Mix only when required.
 Feed after a good intake of colostrum has been achieved (from four days after birth).
 Ensure that clean drinking water is available at all times.
 Ensure that calves have access to hay and Reliance calf feed.
 Keep buckets, bottles and other equipment clean.

Coccidiostat

RELIANCE CALF MILK REPLACER with BOVATEC®; registration number A009679

FOR ANIMAL TREATMENT ONLY

Contains Bovatec 20CC® at 500mg/kg of feed (100mg/kg lasalocid)

Indications: Coccidiosis control in cattle, calves and goats.

Directions: Feed as directed.

Contraindications: Care must be exercised when feeding concurrently with other antimicrobials.

Do not feed with other ionophores e.g monensin capsules, liquid or premix

Ensure recommended dose rates are not exceeded

Not to be used as a single dose treatment.

With-holding:

MEAT: Cattle and Goats – Nil.

MILK: Cattle - Nil, Goats – 35 days.

WARNING: Do not feed to dogs, horses or other equids as ingestion by these species may be fatal.

Ingredients selected from

Wholemilk Powder, Skim Milk Powder, Whey Powder, Vegetable Fats, Soy Protein, Lasalocid (Bovatec®), Vitamins and Minerals.

Typical Analysis (As Fed Basis)

| | |
|---------------|--------|
| Crude Protein | 25–26% |
| Crude Fat | 19–20% |
| Lactose | 44% |
| Minerals | 6% |

WARNING: NOT FOR HUMAN CONSUMPTION

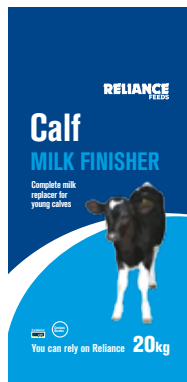
Calf Milk Finisher

RELiance CALF MILK FINISHER is an economical calf milk replacer formulated to meet the needs of young calves after the initial colostrum period. RELiance CALF MILK FINISHER is produced using a range of high quality milk powders, and incorporates a specialised blend of vitamins and minerals for optimum growth and health in calves.

Directions for use

Decide on which feeding option from the tables below best applies to your situation. Pour half of the total water (at 45°C) required for that feed into your feeding bucket. Add the total amount of Reliance Calf Milk Finisher into the water and mix with a whisk until powder has completely dissolved.

Once Reliance Calf Milk Finisher has completely dissolved, the remaining water can be added to produce the total amount of feed required.



Feeding Programme: Once a day system

| AGE IN DAYS | NO. FEEDS / DAY | LITRES / FEED | CONCENTRATION |
|--------------|-----------------|---------------|-------------------|
| 1 - 4 | 2 | 2.5 | Colostrum Only |
| 5 - 14 | 2 | 1 | 150 grams / litre |
| 15 - 28 | 1 | 2.5 | 300 grams / litre |
| 29 - weaning | 1 | 2.5 | 300 grams / litre |

Feeding Programme: Twice a day system

| AGE IN DAYS | NO. FEEDS / DAY | LITRES / FEED | CONCENTRATION |
|--------------|-----------------|---------------|-------------------|
| 1 - 4 | 2 | 2.5 | Colostrum Only |
| 5 - 14 | 2 | 2 | 150 grams / litre |
| 15 - 28 | 2 | 2.5 | 150 grams / litre |
| 29 - weaning | 2 | 2.5 | 150 grams / litre |

Coccidiostat

RELiance CALF MILK FINISHER with BOVATEC®; registration number A009679

FOR ANIMAL TREATMENT ONLY

Contains Bovatec 20CC® at 500mg/kg of feed (100mg/kg of lasalocid)

Indications: Coccidiosis control in cattle, calves and goats.

Directions: Feed as directed.

Contraindications: Care must be exercised when feeding concurrently with other antimicrobials.

Do not feed with other ionophores e.g monensin capsules, liquid or premix.

Ensure recommended dose rates are not exceeded

Not to be used as a single dose treatment.

With-holding:

MEAT: Cattle and Goats – Nil. MILK: Cattle – Nil, Goats – 35 days.

WARNING: Do not feed to dogs, horses or other equids as ingestion by these species may be fatal.

Ingredients selected from

Wholemilk Powder, Skim Milk Powder, Butter Milk, Vitamins and Minerals.

Typical Analysis (As Fed Basis)

Crude Protein 24%

Crude Fat 20%

Lactose 38%



Feeding Systems

Reliance Feeding System One

Low milk volumes, low labour cost – the once a day system

This is a successful system with excellent economics as calves are reared on 15kg of Reliance Calf Milk and 70kg of Reliance Calf 2000.

This method provides enough milk to maintain the calf and give modest development as the main fuel for growth comes from Calf 2000 pellets. Calves should be kept away from grass for at least four weeks as eating grass early on will slow growth down.

Calves on this system will not look in as good condition as calves on higher milk volumes in the first month, but will respond well and show very good weight gain from then on. Calves must have free access to Reliance Calf 2000 pellets, clean water and clean hay or straw from day one.

Calves are started on two daily feeds – one in the morning and another in the evening. The morning feed starts at two litres, then reduces to one litre and is withdrawn completely after seven to ten days (see table). The evening feed is kept at two litres each day with the volume of milk powder progressively increasing from 150g per litre to 250g per litre by day ten. The single evening feed of milk from week three is prescribed so the calves are satisfied overnight and hungry during the day when Calf 2000 pellets are made available.

Milk feeding stops at six weeks and calves can be introduced to quality pasture from six weeks of age; Calf 2000 pellets must be limited to 1.5kg per day until you stop feeding milk.

Very high quality, high protein and high energy feed must be used and Reliance Calf 2000 pellets have been developed and trialled as fitting this rearing method. Calf 2000 delivers high levels of bypass protein, and the overall concentration of energy and nutrients ensures good growth.

Estimated feed requirements per calf:

- 70kg *Reliance Calf 2000*
- 15kg *Reliance Calf Milk*

The following table is a guideline only. It should be adjusted depending on calf size and condition, and environmental factors such as cold weather.

| <i>Calf Age</i> | <i>Daily Milk (Litres)</i> | <i>Daily Feed (Grams)</i> | <i>Notes</i> |
|-----------------|----------------------------|---------------------------|---|
| Day 0-3 | Colostrum | - | |
| Day 4-7 | 2+2 | 50 | Reliance Calf Milk at 200g / litre by day five |
| Week 2 | 1+2 | 150 | Reliance Calf Milk at 250g / litre by day ten |
| Week 3 | 0+2 | 350 | |
| Week 4 | 0+2 | 700 | |
| Week 5 | 0+2 | 1000 | |
| Week 6 | Weaned | 1300 | Wean at 63kg and allow access to good grass |
| Week 7 | - | 1500 | |
| Week 8 | - | 1500 | |
| Week 9 | - | 1500 | |
| Week 10 | - | 1500 | |
| Week 11 | - | - | All grass feeding |

Table 1: Guide to calf nutrition requirements



Feeding Systems

Reliance Feeding System Two

Moderate milk volumes, moderate labour cost

This is a traditional system using one 20kg bag of Reliance Calf Milk per calf, and encouraging early consumption of meal feeds to promote weaning at nine weeks.

Calves should be introduced to Reliance Calf Start Mix at about seven days old. The calf's appetite for pellets can be encouraged by reducing the morning milk feed. One milk feed can be withdrawn when calves are eating Calf Start Mix freely, usually at four to five weeks. Milk is stopped when calves are eating 1.5kg of pellets per day, usually at nine weeks. At week three to four, Reliance Calf 2000 pellets can be mixed in, and at five weeks the calves should be changed over to Calf 2000. Allow access to good quality grass while still on pellets at week six.

Estimated feed requirements per calf:

- 5kg Reliance Calf Start Mix
- 70kg Reliance Calf 2000
- 20kg Reliance Calf Milk

The following table is a guideline only. It should be adjusted depending on calf size and condition and environmental factors such as cold weather.



| <i>Calf Age</i> | <i>Daily Milk (Litres)</i> | <i>Daily Feed (Grams)</i> | <i>Notes</i> |
|-----------------|----------------------------|---------------------------|--|
| Day 0-3 | Colostrum | - | |
| Day 4-7 | 2+2 | 50 | Reliance Calf Milk two litres twice daily |
| Week 2 | 2+2 | 100 | Begin Reliance Calf Start Mix |
| Week 3 | 2+2.5 | 200 | |
| Week 4 | 2+2.5 | 350 | |
| Week 5 | 0+3 | 500 | |
| Week 6 | 0+3 | 700 | On good grass daily |
| Week 7 | 0+3 | 900 | |
| Week 8 | 0+3 | 1100 | |
| Week 9 | - | 1500 | Wean off milk |
| Week 10 | - | 2000 | |
| Week 11 | - | 2000 | |
| Week 12 | - | 1500 | |
| Week 13 | - | - | All grass feeding |

Table 2: Guide to calf nutrition requirements



Feeding Systems

Reliance Feeding System Three

High milk volumes, high labour cost

The use of large quantities of fresh milk, calf milk powder or stored colostrum is well complemented by Reliance Calf Start Mix or Reliance Calf Pellets. Calf pellets are a very economical option.

Using fresh milk as the main feed is common, but it can be uneconomic. Calves will do well initially while the milk satisfies their total energy and protein needs, but they may grow slower at later stages than calves on lower milk systems. Calves may also suffer greater weaning check as their rumens will be less developed.

Estimated feed requirements per calf:

- *50kg Reliance Calf 2000*
- *385 litres of fresh milk*

The following table is a guideline only. It should be adjusted depending on calf size and condition and environmental factors such as cold weather.



| <i>Calf Age</i> | <i>Daily Milk (Litres)</i> | <i>Daily Feed (Grams)</i> | <i>Notes</i> |
|-----------------|----------------------------|---------------------------|--|
| Day 0-3 | Colostrum | - | |
| Day 4-7 | 2+2 | - | Reliance Calf Milk two litres twice daily |
| Week 2 | 2.5+2.5 | - | |
| Week 3 | 2.5+2.5 | - | |
| Week 4 | 2+3 | 100 | Fresh calf pellets each day |
| Week 5 | 3+3 | 200 | |
| Week 6 | 3+3 | 350 | |
| Week 7 | 3+3 | 500 | On good pasture daily |
| Week 8 | 3+3 | 700 | |
| Week 9 | 3+3 | 900 | |
| Week 10 | 3+3 | 1100 | |
| Week 11 | - | 1500 | Weaned |
| Week 12 | - | 1800 | |
| Week 13 | - | - | All grass feeding |

Table 3: Guide to calf nutrition requirements



Nutrition and Rumen Development

In the mature cow a large percentage of carbohydrates and proteins in pasture and supplements are digested by microbes in the rumen to produce volatile fatty acids (energy) and protein for use in maintenance, milk production or pregnancy. Calves are born with an undeveloped rumen and large abomasum. At birth the rumen is only around 25% of the total volume, while the abomasum is up to 60%. The large abomasum is important for digesting and obtaining nutrients from the highly concentrated milk or milk replacer. It is essential that within three to four months the rumen develops to being the main stomach where digestion takes place.

Profitable and successful calf rearing relies on weaning the calf at the youngest possible age without hampering growth rates. This means the calf must be provided with the proper ingredients for rumen development so it can utilise the most amount of grass at weaning.

The following are needed for rapid rumen development:

1. A high quality calf feed that contains high levels of starch.

Dry calf feed does not stimulate the closure of the oesophageal groove so the feed is deposited in the rumen where it stimulates development. Starch promotes the growth of the population of microbes in the rumen, and in particular those that produce volatile fatty acids or energy. In turn these volatile fatty acids stimulate the development of rumen papillae, which are finger-like projections that absorb them. The longer and denser the rumen papillae, the more energy the calf will get from grass and pellets at weaning.

2. Good quality clean hay. *Hay promotes the development of the muscles that surround the rumen, as well as rumen size. This is important for encouraging rumen motility, feed movement around the rumen for digestion and removal of feed from the rumen. A large amount of hay before weaning can result in a large rumen but little papillae development, therefore it is not desirable.*

3. Clean water. *The microbes in the rumen require water to survive. Milk or milk replacer is not free water as it bypasses the rumen via the oesophageal groove. Water helps with the absorption of volatile fatty acids and stimulates the intake of calf feed. The water should be clean and fresh to reduce the risk of pathogens and disease.*

Along with whole milk or calf milk replacer, calves should be provided with good quality calf feed, clean water and hay for rumen development.



Reliance Calf Feeds

It is important to provide calves with good quality calf pellets that are highly digestible, contain balanced levels of energy, protein, minerals and vitamins, promote rumen development and calf growth and that help to protect against coccidiosis. Reliance has a range of high quality, nutritionally balanced calf feeds to suit a wide range of calf rearing systems and ages.

What's in Reliance calf feeds?

Quality Ingredients – Reliance calf feeds contain quality ingredients that have been selected to provide a highly digestible feed to calves.

Ongoing testing and monitoring of these ingredients ensures that Reliance calf feeds are consistently high quality and meet the specifications stated on the bag. Take care when comparing different brands of calf pellets that the products are of similar digestibility and contain the same levels of nutrients. A calf feed may appear cheaper, but because the digestibility is lower the calves get less out of the feed and more is required to get the calf to weaning weight. This means the cheaper feed is less economic in the long run.

Steam Flaked Grains (Calf Start Mix only) – These are grains which have been cooked at higher temperatures using steam, then rolled to flatten and break the seed coat. This provides a higher digestibility feed to young calves when their rumen is still developing which means that calves get more out of the feed they are eating. Steam flaked grains are able to promote higher volatile fatty acid production and encourage faster rumen development.

A balance of energy and protein – Reliance calf feeds contain a balance of protein and energy. The protein used in Reliance calf feeds is high quality with good levels of rumen bypass protein and lysine content.

Gutboosta® concept – This includes a combination of herb essential oils and prebiotics to stimulate early feed intake in young calves, and to help establish and maintain a healthy gut. Prebiotics are specific carbohydrates that are not digested by the calf, but stimulate the growth of beneficial bacteria. This alters the microbial populations to favour beneficial bacteria and help out-compete the bad bacteria in the gut. Essential oils are plant extracts which have been selected for their positive effects on gut health and feed intake. GutBoosta® is a concept uniquely developed for Reliance calf feeds.

Coccidiostat – Reliance feeds contain the coccidiostat, Bovatec®. This is to help protect the calf against coccidiosis and help the calves get more energy out of the feed as their rumen matures.

Vitamins and Minerals – Reliance feeds contain a wide range of vitamins, minerals and trace elements. This includes vitamins A, D and E, as well as the important B group vitamins to support calves on whole milk where levels have been shown to be low. The feeds also contain trace minerals such as cobalt, copper, selenium, iodine, manganese, iron and zinc, which are essential for calf growth and health.

All these ingredients are combined in a pellet to increase utilisation and reduce wastage and dust; dusty feed can irritate the lungs of calves and cause pneumonia, which increases the cost of medications and reduces growth rates.

Reliance Calf Start Mix (see page 26)

Reliance Calf 2000 (see page 27)

Reliance Calf Pellets 16% (see page 28)

Reliance Econocalf (see page 29)



Calf Feed Specification Sheets

Calf Start Mix

CALF START MIX is a high quality, highly digestible muesli style feed for young calves.

RELiance CALF START MIX CONTAINS:

- *Quality ingredients.*
- *Steam flaked grains to maximise digestibility and palatability for young calves and stimulate early uptake of feed.*
- *GutBoosta® with prebiotics and essential oils for calf health and feed intake.*
- *The coccidiostat Bovatec® to help prevent coccidiosis.*
- *Molasses for increased palatability.*
- *Essential vitamins and minerals. This includes vitamins A, D and E, as well as B vitamins which are low in cow's milk.*
- *Trace elements such as cobalt, copper, selenium, iodine, manganese, iron and zinc.*

All Reliance feeds are part of CRT's quality assurance programme and are quality tested to meet their stated specifications. Reliance calf feeds are made fresh.

Feeding Recommendations

Feed RELiance CALF START MIX from four days after birth (after good intake of colostrum has been achieved) until three to four weeks of age before transitioning onto RELiance CALF 2000. Provide RELiance CALF START MIX along with fresh whole milk or calf milk replacer and grass or hay. Ensure calves have access to clean drinking water at all times.

Coccidiostat

RELiance CALF START MIX with BOVATEC®; registration number A009679

FOR ANIMAL TREATMENT ONLY

Contains Bovatec 20CC® at 450g/tonne of feed (90g/t lasalocid)

Indications: Coccidiosis control in cattle, calves and goats. **Directions:** Feed as directed.

Contraindications: Care must be exercised when feeding concurrently with other antimicrobials.

Do not feed with other ionophores e.g monensin capsules, liquid or premix

Ensure recommended dose rates are not exceeded. Not to be used as a single dose treatment.

With-holding: MEAT: Cattle and Goats – Nil. MILK: Cattle – Nil, Goats – 35 days.

WARNING: Do not feed to dogs, horses or other equids as ingestion by these species may be fatal.

Ingredients selected from

Barley, Soyabean Meal, Canola, Peas, Wheat, Maize, Oats, Molasses, Vegetable Oil, Grass Seed Meal, Wheat By-products, Minerals, Coccidiostat (Bovatec®), Vitamins, Prebiotics, Essential Oils.

RELiance CALF START MIX contains no Palm Kernel Meal.

Typical Analysis (DM Basis)

| | |
|---------------|------------|
| Energy | 13MJ/kg DM |
| Protein | 18% |
| Fat (minimum) | 2% |

The Metabolisable Energy (ME) values are calculated by a registered laboratory from an equation and are not an actual measured value. Therefore they are only a guide for predicting the energy content of a feed.



Calf 2000

RELiance CALF 2000 is a high protein calf pellet to encourage good growth rates in young calves.



RELiance CALF 2000 CONTAINS:

- *Quality ingredients in a pellet for increased utilisation and reduced wastage.*
- *Highly digestible ingredients to stimulate rumen development.*
- *GutBoosta® with prebiotics and essential oils for calf health and feed intake.*
- *The coccidiostat Bovatec® to help prevent coccidiosis.*
- *Molasses for increased palatability.*
- *Essential vitamins and minerals. This includes vitamins A, D and E, as well as B vitamins which are low in cow's milk.*
- *Trace elements such as cobalt, copper, selenium, iodine, manganese, iron and zinc.*

Feeding Recommendations

Feed RELiance CALF 2000 from four days after birth (after good colostrum intake has been achieved) or from week three to four after feeding RELiance CALF START MIX.

At three to four weeks transition to RELiance CALF 2000 then at eight to nine weeks transition to Reliance calf 16%. At weaning, daily feed intake should be between 1 to 1.5kg/day, depending on size and breed. Keep feeding RELiance CALF 16% for a minimum of four weeks post weaning. For optimum performance feed RELiance CALF 16% until six to eight weeks after weaning or a live weight of 100 to 120kg has been achieved.

Provide RELiance CALF 2000 along with fresh whole milk or calf milk replacer and grass or hay. Ensure calves have access to clean drinking water at all times.

Coccidiostat

RELiance CALF 2000 with BOVATEC®; registration number A009679

FOR ANIMAL TREATMENT ONLY

Contains Bovatec 20CC® at 450g/tonne of feed (90g/t lasalocid)

Indications: Coccidiosis control in cattle, calves and goats.

Directions: Feed as directed.

Contraindications: Care must be exercised when feeding concurrently with other antimicrobials.

Do not feed with other ionophores e.g monensin capsules, liquid or premix

Ensure recommended dose rates are not exceeded

Not to be used as a single dose treatment.

With-holding: MEAT: Cattle and Goats – Nil. MILK: Cattle - Nil, Goats – 35 days.

WARNING: Do not feed to dogs, horses or other equids as ingestion by these species may be fatal.

Ingredients selected from

Barley, Soyabean Meal, Canola, Peas, Wheat, Maize, Oats, Molasses, Vegetable Oil, Grass Seed Meal, Wheat By-products, Minerals, Coccidiostat (Bovatec®), Vitamins, Prebiotics, Essential Oils
RELiance CALF 2000 does not contain any Palm Kernel Meal.

Typical Analysis (DM Basis)

| | |
|---------------|------------|
| Energy | 13MJ/kg DM |
| Protein | 20% |
| Fat (minimum) | 1.5% |

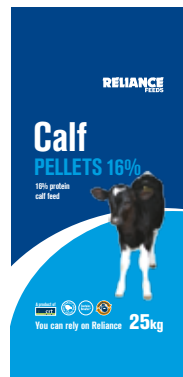
The Metabolisable Energy (ME) values are calculated by a registered laboratory from an equation and are not an actual measured value. Therefore they are only a guide for predicting the energy content of a feed.

Calf Pellets 16%

RELiance CALF PELLETS 16% is designed for young calves.

RELiance CALF PELLETS 16% CONTAINS:

- *Quality ingredients in a pellet for increased utilisation and reduced wastage.*
- *Digestible ingredients for continued rumen development and calf growth.*
- *GutBoosta® with prebiotics and essential oils for calf health and feed intake.*
- *The coccidiostat Bovatec® to help prevent coccidiosis.*
- *Molasses for increased palatability.*
- *Essential vitamins and minerals. This includes vitamins A, D and E, as well as B vitamins which are low in cow's milk.*
- *Trace elements such as cobalt, copper, selenium, iodine, manganese, iron and zinc.*



Feeding Recommendations

Transition from RELiance CALF 2000 to RELiance CALF PELLETS 16% at eight to nine weeks of age.

At weaning daily feed intake should be between 1 to 1.5kg/day, depending on size and breed.

Keep feeding RELiance CALF PELLETS 16% for a minimum of four weeks post weaning.

For optimum performance feed RELiance CALF PELLETS 16% until eight weeks after weaning, or a live weight of 100 to 120kg has been achieved.

RELiance CALF PELLETS 16% can be used from a younger age, as well on traditional twice a day milk feed systems with a higher milk/milk replacer use.

Provide RELiance CALF PELLETS 16% along with fresh whole milk or calf milk replacer and grass or hay.

Ensure calves have access to clean drinking water at all times.

Coccidiostat

RELiance CALF PELLETS 16% with BOVATEC®; registration number A009679

FOR ANIMAL TREATMENT ONLY

Contains Bovatec 20CC® at 450g/tonne of feed (90g/t lasalocid)

Indications: Coccidiosis control in cattle, calves and goats.

Directions: Feed as directed.

Contraindications: Care must be exercised when feeding concurrently with other antimicrobials.

Do not feed with other ionophores e.g monensin capsules, liquid or premix

Ensure recommended dose rates are not exceeded. Not to be used as a single dose treatment.

With-holding:

MEAT: Cattle and Goats – Nil. MILK: Cattle – Nil, Goats – 35 days.

WARNING: Do not feed to dogs, horses or other equids as ingestion by these species may be fatal.

Ingredients selected from

Barley, Soyabean Meal, Canola, Peas, Wheat, Maize, Oats, Grass Seed Meal, Wheat By-products, Molasses, Vegetable Oil, Minerals, Coccidiostat (Bovatec®), Vitamins, Prebiotics, Essential Oils

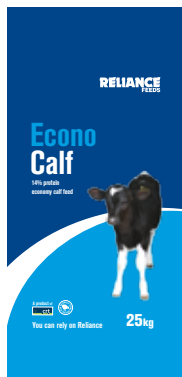
RELiance CALF PELLETS 16% does not contain Palm Kernel Meal.

Typical Analysis (DM Basis)

| | |
|---------------|------------|
| Energy | 13MJ/kg DM |
| Protein | 16% |
| Fat (minimum) | 1.5% |

The Metabolisable Energy (ME) values are calculated by a registered laboratory from an equation and are not an actual measured value. Therefore they are only a guide for predicting the energy content of a feed.

Econo Calf



RELIANCE ECONO CALF is designed for situations where good volumes of milk are available up to 10 weeks of age.

RELIANCE ECONO CALF CONTAINS:

- *Quality ingredients in a pellet for increased utilisation and reduced wastage.*
- *Molasses for increased palatability.*
- *Essential vitamins and minerals. This includes vitamins A, D and E, as well as B vitamins which are low in cow's milk.*
- *Trace elements such as cobalt, copper, selenium, iodine, manganese, iron and zinc.*

Reliance feeds are part of CRT's quality assurance program and are quality tested to meet their stated specifications. Reliance calf feeds are made fresh.

Feeding Recommendations

Transition from RELIANCE CALF 2000 to RELIANCE ECONO CALF at six weeks of age.

At weaning, daily feed intake should be between 1 to 1.5kg/day depending on size and breed.

Keep feeding RELIANCE ECONO CALF for a minimum of four weeks post weaning.

For optimum performance feed until eight weeks after weaning, or a live weight of 100 to 120kg has been achieved.

Provide RELIANCE ECONO CALF along with fresh whole milk or calf milk replacer and grass or hay.

Ensure calves have access to clean drinking water at all times.

Ingredients selected from

Barley, Soyabean Meal, Canola, Peas, Wheat, Maize, Oats, Palm Kernel Meal, Grass Seed Meal,

Wheat By-products, Molasses, Vegetable Oil, Minerals, Vitamins

RELIANCE ECONO CALF contains up to 5% Palm Kernel Meal.

Typical Analysis (DM Basis)

| | |
|---------------|------------|
| Energy | 13MJ/kg DM |
| Protein | 14% |
| Fat (minimum) | 2% |

The Metabolisable Energy (ME) values are calculated by a registered laboratory from an equation and are not an actual measured value. Therefore they are only a guide for predicting the energy content of a feed.



CRT Directory

CRT Feed Mills

| | |
|--|-------------|
| CRT Feed Mill Rolleston, 9 Link Drive, Rolleston | 03 347 3670 |
| CRT Feed Mill Winton, 339 Great North Road | 03 236 6014 |

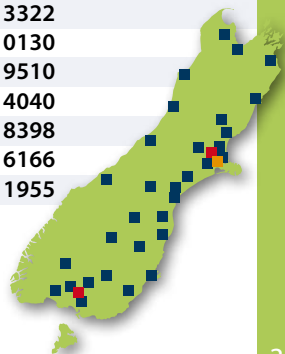
CRT FeedBarn

| | |
|---|-------------|
| CRT FeedBarn, 144 West Coast Road, Christchurch | 03 342 9245 |
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CRT FarmCentres

| | |
|---|-------------|
| MOTUEKA, 393 High Street | 03 528 1100 |
| RICHMOND, 32 Main Road, Hope | 03 543 9450 |
| BLENHEIM, Cnr Kinross & Redwood Streets | 03 579 3150 |
| KAIKOURA, 70 Beach Road | 03 319 5448 |
| WESTPORT, Cnr Fonblanque Street & The Esplanade | 03 788 8340 |
| GREYMOUTH, 25 Herbert Street | 03 768 5743 |
| HOKITIKA, 51 Fitzherbert Street | 03 756 9069 |
| WHATAROA, 69 Scally Road | 03 756 1040 |
| CULVERDEN, 70 Mountain View Road | 03 315 8692 |
| AMBERLEY, 86 Carters Road | 03 314 8340 |
| RANGIORA, 269 Flaxton Road | 03 313 2299 |
| CHRISTCHURCH, 156 Waterloo Road, Hornby | 03 344 4045 |
| DARFIELD, 40 South Terrace | 03 318 7610 |
| LEESTON, 14 Station Street | 03 324 8022 |
| ASHBURTON, 418 West Street | 03 307 9140 |
| TEMUKA, 41 King Street | 03 688 6655 |
| TIMARU, 32 North Street | 03 687 9459 |
| FAIRLIE, Talbot Road | 03 685 8586 |
| WAIMATE, 23 Shearman Street | 03 689 8862 |
| KUROW, 34 Bledisloe Street | 03 436 0917 |
| OAMARU, 33 Thames Street | 03 433 1030 |
| RANFURLY, Charlemont Street East | 03 444 1060 |
| ALEXANDRA, 1 Ngapara Street | 03 440 2030 |
| DUNEDIN, 84 Cumberland Street | 03 477 9040 |
| BALCLUTHA, Baxter Street | 03 418 3322 |
| TAPANUI, 2 Station Road | 03 203 0130 |
| GORE, Lyne Street | 03 203 9510 |
| MOSSBURN, 31 Devon Street | 03 248 4040 |
| OTAUTAU, 175 Main Street | 03 225 8398 |
| WINTON, 15 Springfield Street | 03 236 6166 |
| INVERCARGILL, 97 Leet Street | 03 211 1955 |

CRT FarmCentres are open to everyone and we welcome you to shop at any of our stores South Island wide



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RELIANCE
FEEDS

You can rely on Reliance