



Making rearing stress-free

Four-day-old calves are some of the most vulnerable, fragile, and high-risk farmed animals in New Zealand, a Manawatu vet says. **Russell Priest** reports.

Totally Vets Feilding-based Juan Klue says calves require the highest levels of hygiene, biosecurity, and feeding if they are to be reared successfully.

During the calf-rearing season he is regularly confronted by rearers who are stressed out because of major outbreaks of calf scours.

“I hate being the ambulance at the bottom of the cliff when it comes to sick calves.”

He knows in such situations there is sometimes a limited amount they can do to change the outcome which can be dead calves.

In 2019 Klue set up a Red Meat Profit Partnership (RMPP) action group consisting of calf rearers who were all enthusiastic about learning, exploring new ideas and sharing information with the common goals of reducing calf sickness and death rates and rearing calves efficiently.

These calf rearers buy in calves four days or older and either sell them at weaning, at a nominated weight

(100kg+) or finish them as rising two-year-olds.

“Shoring up the clinic’s knowledge along with my own and that of farmers was my own personal goal.”

This information accumulating process is part of an overall strategy of Totally Vets as a company which advocates a disease preventative approach to farming as well as giving advice that supports and maximises the chances of success of products that it sells.

Klue kicked off the knowledge-gathering process by undertaking a large amount of background research. This process was helped considerably by an association Totally Vets has formed with a New Zealand-based company Nutrinza and United Kingdom-based company Volac International. Operating throughout the UK, Ireland Volac has accumulated a wealth of knowledge on calf rearing as a result of extensively researching the subject in line with producing calf milk replacers. A number of successful NZ calf rearers were also interviewed producing information that has been used to supplement this overseas research and

added a NZ perspective.

Using knowledge learned from this process Juan now maintains there are two primary interlinked goals for calf rearing focusing on preventing disease and maximising growth efficiently.

He believes that in order to prevent or minimise the severity of a disease an understanding is required of:

- the major factors necessary for the development of the disease
- how these can be influenced to produce a favourable outcome.

These major factors include a susceptible host, a disease causing organism (the pathogen) and a favourable environment for the disease to establish.

He also maintains to maximise growth efficiently requires an understanding of:

- what affects feed conversion efficiency (the ability to convert nutrients into muscle and skeletal growth)
- what causes growth checks
- how these can be influenced to produce a favourable outcome.

Another key ingredient for successfully rearing calves is to measure, monitor and record all management aspects of the calf rearing process. Without baseline information and continued monitoring Klue Juan believes appropriate adjustments cannot be made to effect improvement if required.

To help calf rearers prevent or minimise disease severity Juan came up with some management principles to help neutralise the major factors required for the development of disease. These principles are:

- Maximise calf immunity
- Minimise the effects of stressors
- Minimise exposure to disease causing pathogens
- Minimise calf sickness and death rates.

For dairy farmers the main influencer of a calf's susceptibility to disease and immunity is colostrum management. Ideally a new-born calf should be fed 10-15% of its body weight (litres) within 12-24 hours of being born of hygienically collected, first milked ('gold' \geq 22% Brix reading) colostrum from a recently calved healthy cow. Further hygienically stored and preserved colostrum should be fed for as long as possible thereafter.

For calf rearers the main influencers of a calf's susceptibility to disease and immunity are:

- Colostrum management (which calf

rearers generally have no control over)

- The physiological effects of stress especially that caused by transportation between farms (and/or sale yards)
- Environmental changes
- Personnel changes (exposure to different people)
- Feed changes on the day of sale.

Stress impacts on the calf's ability to fight and remove bacteria, viruses and foreign material from within the body. It impacts on its ability to produce antibodies making it more susceptible to disease. Stress also reduces the amount of hydrochloric acid produced in the abomasum (the calf's stomach). It can cause an inflammation of the intestine which can lead to a nutritional scour after the calf has been fed milk further increasing its susceptibility to gut pathogens.

One strategy Juan learned to help overcome stress was for rearers to put transported calves into a warm, dry, clean pen and feed them a warm, good quality, isotonic electrolyte on arrival at the calf-rearing facilities and then allowing them time to rest for up to six hours before feeding them milk.

"I know there is not a lot I can do except advise the client to spend a heap of money on remedies that don't have a high success rate."

Other strategies to minimise the impacts of stress include keeping management as consistent as possible (feed timing, feed concentration, feed volume, feeding personnel etc.) and to make any management adjustments slowly over a few days. Another strategy is to spread management events out over time such as vaccinating, weaning and changing feed type and not try to do them all at once.

Vaccinating calves with products that boost antibody production against salmonella and clostridial diseases are also key strategies to boost immune function as can be the supplementation of injectable trace elements such as copper and selenium.

The environment plays a role in disease development as well. For example, cold, wet calves are more susceptible to disease



Feilding veterinarian Juan Klue says rearers are regularly stressed out by massive outbreaks of calf scours and wants to change it.

as energy is partitioned away from growth and immune function into keeping warm. Strategies should be put in place to prevent this such as providing warm, dry pens, topping up bedding regularly, feeding more milksolids per day, feeding warm milk, using calf covers and/or providing nest areas at the back of the calf pen.

Hygiene and biosecurity are key elements for minimising the spread of disease-causing pathogens as well. If hygiene and biosecurity measures cannot be implemented throughout the calf-rearing season because of constraints then at the very least these should be practised with calves less than three weeks old as this is the period they are most susceptible to disease.

"Think of every pen or batch of calves as an island", Juan said. "Prevent disease from entering and leaving each island, unless they are sick calves getting separated from healthy calves."

Having a dedicated, isolated sick pen and feeding and treating sick calves after the healthy ones as well as using separate personal gear and equipment on the sick calves are key hygiene and biosecurity strategies. Other strategies include steam-cleaning or hot-water-blasting sheds prior to the season, daily cleaning and disinfecting of personal gear and feeding

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Above: 'Think of every pen or batch of calves as an island.'

equipment, wearing disposable gloves, wearing an apron, preventing contact between calves from neighbouring pens, cleaning out pen feeders regularly, topping up bedding regularly to name a few.

Juan also believes that if disease is occurring among the calves a veterinarian should be consulted for advice. An initial phone call is generally free but the input could save deaths, time, money and stress. He also believes getting a diagnosis as soon as possible is vital especially with scouring calves as there are different pathogens that can cause scours but they may require different types of treatment and the sooner the correct treatment begins the better the outcome will be. Getting a diagnosis is also essential as management changes can be implemented based on preventing disease in the healthy calves in the present calf rearing season as well as preventing disease in future seasons.

Nutrition also plays a major part in preventing disease as well as maximising growth.

The older the cattle beast the lower its feed conversion efficiency (FCE) which is its ability to convert nutrients into muscle and skeletal growth. An 11-month-old cattle beast can only convert about 8% of its feed intake into weight. A calf less than a month old

when healthy and not using energy to keep warm can convert up to 50% of its feed intake into muscle and skeletal growth. Therefore it makes sense to capitalise on this high growth period by feeding a calf well during the first few weeks of life. Juan believes underfeeding during this period is an opportunity lost.

A high, early feed intake underpins the high volume, accelerated, intensified approach to calf rearing. This approach aims to:

- Maximise early FCE and therefore early growth potential
- Improve health outcomes as more nutrients are available to the immune system to fight disease and for keeping warm.

Calves cannot derive enough nutrients from meal within the first three weeks of life to substantially influence immune function and growth. Therefore most nutrients during this early stage of a calf's life must be derived from milk.

Calves on mum can feed ad-lib to achieve maximum growth but this is not the case in most calf rearing operations. Calves can consume up to 15 – 20% of their body weight in whole milk volume per day in their first few weeks of life. However, they must be fed a high-

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Ewes No LSD	112
Hoggets LSD	71
Hoggets No LSD	58

OptiLamb Analysis - Lamb Loss % (1993 - 2006)

Group	% Lamb Loss
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Ewes No LSD	21
Hoggets LSD	25
Hoggets No LSD	29

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quality, highly digestible whole milk or calf milk replacer up to a milksolids concentration of 20% for this to be successfully implemented otherwise nutritional scours or bloat can occur.

Calves need to be transitioned from a low milk feed intake to this higher feed intake over 3-4 days. Most calf milk replacers (CMR) feeding recommendations are below this level of intake to minimise the risk of nutritional scours and bloat. Some CMRs, like Blossom Hi Spec, have feeding recommendations that focus on an accelerated approach to calf rearing.


Other strategies that influence FCE include providing ad-lib clean water, ad-lib access to high-quality meal (high palatability, energy > 12 megajoules of metabolisable energy (MJME)/kg, protein 18-20%, coccidiostat, vitamins and minerals) and access to high-quality fibre feed (if this is not the meal then meadow hay, lucerne hay, pea straw can be used). Other nutritional additives can be used with success as well such as probiotics, Optiguard or bentonite.

When using an accelerated approach to calf rearing weaning off milk is an important process and should be done well to minimise the risk of any subsequent growth checks through poor rumen development. Calf-rearers can use several indicators to predict that calves have good rumen development and enough body reserves to be weaned with minimal growth checks.

These are:

- weaning calves over a period \geq 10 days
- weaning calves \geq eight weeks old and at \geq twice their birth weight.

Calves need to have been eating meal for at least three weeks and be eating at least 1kg meal per day with ad-lib clean water essential.

Juan freely admits there is no one-size-fits-all approach to calf-rearing but he hopes the information that he has learned and collated will help him help those that rear calves. If others are looking for calf-rearing information talk to your local veterinarian, follow calf-rearing forums (but base your actions on science if applicable), or research calf rearing websites like Volac Feed for Growth, DairyNZ, Dairy Australia et al. 

Test for the best

BY: KATHERINE DEWITT

I've been obsessed with a little tool called a Brix refractometer for a few years now.

Squirt some colostrum on the tool, look through the eyepiece, read the scale and you can determine the quality of colostrum in seconds. It's a useful option to add to your calving toolbox to help make informed decisions so your calves get the best quality colostrum.

When talking to farmers who use Brix refractometers the same learnings come up again and again.

Colostrum quality varies and unfortunately you can't tell how good the colostrum is unless you test it.

Otago farm manager James Matheson is one farmer who started using a Brix refractometer four years ago – a move that's vastly improved the health of his calves.

As part of the WelFarm programme run by XL vets, calves at Chris Lawlor's Waipahi farm, managed by James, were given antibody blood tests. These tests establish whether calves have received enough protective antibodies to help them develop immunity.

"Back then, we were rearing 250 calves and thought we were doing a good job but it turned out half the calves weren't getting enough of the right colostrum, so we had to make changes," says James.

"Our vet introduced us to the Brix refractometer and since we've been using it to test colostrum we haven't looked back."

Once his team started using the Brix they followed up with antibody blood tests and had pretty much perfect results, whereas before it had been "a bit hit and miss."

"We would strip the cow into a test bucket and everyone would be saying 'look at this – it's good stuff'. But when we tested it, it was terrible so we were failing to identify the best colostrum and the calves were missing out.

"There's an old tale out there about heifers having terrible colostrum but, in reality, we've found that quite often they have better quality colostrum than the cows, albeit less volume.

James says the best colostrum goes to newborns, the next best goes to first and second feeders, and it peters off from there

until the calves are four days old.

"It's made us realise how important it is to test colostrum quality. This is reflected in the health of the calves too because since we started using a Brix refractometer we haven't lost a calf through illness."

CALF REARING BY TRAFFIC LIGHT

These days James and his team rear 500 calves. It's a big operation and needs a finely tuned system.

In charge of calf rearing is Reuben Earl, who joined the team fresh from Telford Agricultural College two seasons ago. James says at the time they didn't have a dedicated calf rearer, which most farmers would consider essential.

"This was Reuben's first job, so it was vital that we had good systems in place from the start. Reuben and I collected all the information we could lay our hands on, including from DairyNZ's website, and developed a plan that followed best practice. We call it our 'traffic light' system."


Under the system, new calves are sprayed with a blue dot, tubed with gold colostrum, given a probiotic and a mineral jab. They get a red dot while they're learning to drink, an orange dot when they've got the hang of it, and a green dot when they feed on schedule.

LEVEL UP YOUR CALF CARE

To help farmers take their calf care to the next level, DairyNZ developed the Calf Care Toolkit last season. So far, it's been used by more than 2000 farmers.

It's easy to use: simply answer 12 easy questions online and get instant tailored feedback and farmer advice on ways to make your calf care even better.

Once you've decided which areas to focus on, follow the web links for more advice and support. You can also share the results with your team, vet or consultant.

Give it a go at dairynz.co.nz/calf-care-toolkit. 

• Katherine DeWitt is a Developer, Animal Care Team, DairyNZ.

