

# On-Farm Practices to Minimize Death Loss in Calves

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## ■ Take Home Messages

- We view our heifer-raising program from the big picture, and from the long-term benefits
- Our approach does not revolve around one single “hot tip”, but rather we put together comprehensive standard operating procedures, carried out daily with consistency and enthusiasm.
- A dairy will achieve greater goals with properly home-raised heifers than with purchased animals
- Raising dairy heifers is not a cost, it is an investment.

## ■ Introduction

Baby calves are usually the least appreciated members of the dairy animal team. The care and attention needed to nurture these revenue-consuming units into revenue-generating units is perceived as a necessary evil to be endured for as short a time as possible. As I have listened to the rhetoric concerning the feeding of calves, I have come to believe that many of the “experts” are working more for the farmers, and not so much for the calves. I know there are those in the industry who encourage improved feeding parameters called “accelerated” programs, which really are not so much accelerated, as they are a move back to reasonable from unreasonable. Generally speaking, though, I have found most approaches cater to the workers first. It is my assertion that a paradigm shift, that begins with a concerted effort all the way back to the breeding program, will allow a dairy’s calves to be viewed, and cared for, in a different light.

I can only relate my own experiences as a calf raiser, and I do not, by any means, intend to suggest there is only one way to do the job successfully. Every dairy has its own unique set of circumstances that will define practical

and implementable protocols. Factors such as the daily cost, the availability of qualified labour, and the time requirement are common concerns and limitations. Whatever the individual approach, however, by prioritizing protocols, allocating resources, and, perhaps most importantly, remaining doggedly consistent, we have found that it is possible to custom-design a successful calf-raising program.

There are no lazy short cuts; there are no magical treatments that can undo shoddy animal husbandry; there is no one “hot tip”. Rather, there is an old cliché: “You can pay now, or you can pay later, but you will pay” that we have found to be highly applicable in the raising of calves. The gain of saving even one heifer calf, however, validates the investment costs, as well as the due care and attention, necessary for a successful heifer-raising program. Furthermore, by decreasing not only the mortality rate, but also the morbidity rate, one can look forward to sufficient replacements for their dairy herd, and perhaps even to having a few extra to sell. With healthier calves to raise, it becomes a joy, and not a burden. Every heifer born should be regarded as an income-generating trainee. It’s up to you to see that she receives the training necessary to allow her to maximize her genetic potential, and to become an income-generating unit.

## ■ Start with the Dams

At Shiloh Dairy, we first look at the big picture. We start with our breeding program, which begins with planned mating for each cow and heifer. If you are excited and hopeful about the next generation, you will prepare well for each arrival, and you will have extra incentive to ensure their survival. Calving ease, particularly with heifers, is of great concern, since dystocia is a significant factor in death loss of calves. Sam Leadley, Attica Veterinary Associates, believes that the death rate of calves pulled by hand is approximately five percent, and that the rate may be as high as thirty-six percent in calvings requiring mechanical intervention. We believe that calving ease should be a primary consideration in choosing semen for virgin heifers.

The next consideration is the pre-calving vaccination program. All pregnant animals are given a series of vaccinations, starting at 225 DCC (Days Carrying Calf), which cover both the disease concerns for the dam, as well as the childhood diseases such as scours and salmonella in the calves. There are excellent vaccines available, and it is always wise to have a robust vaccination program. We abide by the “no more than two gram-negative vaccines at a time” rule of thumb. We feel that investing in a strong vaccination program offers desirable, crucial protection against pathogens for the dam during the time of peak stress before, and especially after, calving. As well, it provides an opportunity for excellent quality colostrum to facilitate successful passive transfer in the calves.

## ■ Far-off and Close-up Pens

We work closely with a reputable nutritionist in order to provide a balanced pre-fresh ration. We feed a high fiber, low energy ration throughout the dry period. It is designed to minimize the potential for the animals to become over conditioned, an obvious contributor to dystocia, as well as milk fever, ketosis, metritis, displaced abomasums, and all the other burdensome conditions that can plague the transition cow. We have four-row barns, with sand-bedded freestalls. The alleys are scraped mechanically three times per day. The stalls are hand-raked three times per day, power raked every two days, and new sand is added once per week. The stalls are 1.2 m x 2.3 m, with additional lunge space in front, which allows sufficient room for large animals that are heavy in calf.

The production of high quality colostrum requires prudent planning. The dry period, especially the three weeks before calving, is not the time to house cows in overcrowded pens. There is only a small window of opportunity to allow for the production of high quality colostrum, so we make sufficient provision for our close-up animals. Newly dried cows and far-off heifers are housed in a pen with 159 stalls and 160 headlocks. We stock to one hundred percent in the far-off pen. The close-up pen has 70 stalls and 76 headlocks, and we try to maintain a stocking rate of eighty-five percent, going to not more than one hundred percent during high calving swings, which generally happen about twice a year. We move animals into the close-up pen only once per week in an effort to minimize stressful changes in the social dynamic of the pen. A clean, comfortable, and stress-minimized environment is what the close-up cow needs in order to have a good chance to provide her calf with quality immunoglobulins.

## ■ The Calving Pens

At Shiloh Dairy, we strive to provide a clean, safe environment for both the calving animal and the calf. We have five individual calving pens that are cleaned after each calving. The dirty straw is removed with a skid steer; the pen is raked and limed, and then left open until needed for the next calving animal. The close-up pen is walked every hour, and when a heifer or cow exhibits signs of calving, she is moved into a pen, and clean, dry straw is added. We closely monitor the calving cows for progress.

Malpresentations are sufficiently common occurrences that a cow or heifer will be examined vaginally if she has not calved within one hour. Sterile technique is observed so as not to unnecessarily introduce pathogens that might lead to metritis. We check for the usual array of difficulties such as insufficient contractions, an excessively large calf, backwards calf, reflexed

limbs or head, twins coming simultaneously, and a twisted uterus. We intervene mechanically only when an animal has demonstrated an inability to successfully calve on her own. It is always a judgment call, dependent upon each individual cow and circumstance. The only rule set in stone for us is “if you use the jack, you have to use plenty of lubricant”. We have a “Drench Mate” pail that is excellent for infusing lubricant into a calving animal. One person can easily use it, and it rapidly delivers a tremendous amount of liquid.

## ■ Newborn Calves

We have a row of seven hutches located in the calving area. They are built out of white plastic, which is very easy to maintain. They, too, are cleaned after each calf. We scrub them with a mixture of hot water, soap and bleach. After sweeping out the excess liquid, the floor is limed, and the walls are sprayed with a powerful disinfectant. They are left open until needed by a new calf. All calves are removed from the calving pen immediately after birth, and placed in one of the clean, freshly bedded hutches. They are vigorously rubbed with hand towels to mimic the licking action so concernedly administered by the cows. This provides a good measure of beneficial stimulation for the calves. It is suggested to make sure to concentrate on the front end to aid with respiration. Calves especially need to be stimulated to breathe deeply to get their lungs well inflated.

These protocols resulted from our goal to minimize death loss in the calving pen, and to work towards a Johne’s free herd. All cows are blood tested at dry off, and the resulting positive animals are identified with a brightly coloured ear tag. By removing the calves immediately after birth, we eliminate the risk of their being stepped on, as well as preventing the possibility of their ingesting Johne’s- contaminated manure.

## ■ Colostrum Handling and Feeding

We milk all fresh cows and heifers immediately after calving. Each pen has a headlock, as well as a vacuum line, so every animal may be milked while still in their individual calving pen. This allows us the opportunity to harvest colostrum at its peak quality. The calves are fed within one hour after birth. We feel that feeding freshly harvested colostrum from wisely vaccinated dams provides two key advantages. One is the assurance of defending against early childhood diseases through the vaccines; the other is the provision of the dam’s natural immunological defenses to the bacterial/viral profile of the herd and the premises.

Obviously, achieving successful passive transfer of high quality colostrum is

of utmost importance in the first 24 hours of a calf's life. And, although quality may be the operative word, quantity can make up for a shortfall in quality. It is very simple to test colostrum quality using a colostrometer. Remember, colostrum contains a natural laxative to gently assist in the passing of the meconium. Calves that have consumed a large quantity of colostrum, and then appear to be scoured, are not scoured. Rather, they have obviously consumed a generous amount of colostrum, and their stool will firm up within the next 24 hours.

A calf's digestive tract is designed to digest colostrum for the first 24 hours. We feed at least three liters of colostrum by bottle within one hour of birth, although a calf is allowed to drink to satiation at the first feeding. I believe the current record is six liters. A second feeding of colostrum is offered four to six hours later, with this time being extended to as much as ten or twelve hours, if necessary, for those calves that have consumed four liters or more at the first feeding. Calves who will not voluntarily consume at least two liters are either given more time or are tubed the remainder. We allow for a judgment call with each calf. We give every calf the chance to nurse from a bottle, and only those who cannot, or will not, drink, are tubed their colostrum. Newborn calves have a strong instinct to nurse, and the vast majority will drink enthusiastically when the bottle is offered gently and patiently. We wear clean, nitrile gloves when feeding all calves, being mindful that everything they ingest has systemic access through their open digestive tract.

With the possible transmission of Johne's to a calf through the ingestion of colostrum, we only feed bull calves the colostrum from the identified Johne's positive animals. The colostrum is stored in an upright freezer in either a calf-feeding bottle for the next feeding, or in two-liter plastic jugs for longer-term storage. To minimize bacterial growth, the colostrum is placed in the freezer immediately after being poured into the appropriate storage vessels. The dam's barn ID number and the date are written on any jugs of extra colostrum so that should it be required at a later date, we can thaw two jugs from the same animal. When a heifer calf is born to a Johne's positive cow, we thaw two jugs of colostrum in warm water for the first feeding, and place a third jug in cold water to thaw more slowly for the second feeding. Jugs containing colostrum from Johne's positive animals are clearly marked to prevent, hopefully, someone from inadvertently feeding it to a heifer calf.

## ■ Dystocia Calves

Heifer calves that experience a dystocia birth and are sluggish and stressed are given an injectable anti-inflammatory as soon as possible after arrival. They are often reluctant to drink from a nursing bottle, so we make a judgment call. Tubing is a stressful procedure for them, so if they will drink even two to three pints of colostrum, we will offer them the bottle again in a

few hours. If they completely refuse to drink, they are tubed their three liters of colostrum. We have found that calves that have been tubed are more likely to experience some Clostridial bacteria growth in their digestive tract within 24 to 48 hours. The symptoms include lethargy, weakness, anorexia and bloat. We treat them with Clostridial Anti-Toxin and Polyflex orally, and usually find that only one treatment is necessary to resolve the problem. It is amazing to watch them go from extremely ill to robust health in a matter of a few hours. A calf that was treated in the morning will be eagerly anticipating her milk by the afternoon feeding.

## ■ Serum Protein Levels

I draw a blood sample from all heifer calves at 24 hours of age, and measure the serum protein using a refractometer. Our average for the past three years is 6.3 g/dl, while our average for the past twelve months is 6.5 g/dl. This practice allows me to monitor the quality of our colostrum, the timeliness of its delivery to the calves, and the success or failure of passive transfer in the calves. We do not test our colostrum because we feed so aggressively. Naturally, if the colostrum is bloody, or shows signs of mastitis, it is discarded. Interestingly, there is no difference between the serum protein levels of calves from heifers than calves from mature cows. I post the results, along with the time of birth, the time of feeding, and the feeder, on a dry-erase board in the kitchen area of the office wing. There is great pride among our workers at seeing their name beside a high serum protein result. Our current record is 8.6 g/dl.

## ■ Processing Newborn Heifer Calves

Aside from colostrum feeding, another key component of our processing of newborn calves is to disinfect their navels with 7% strong iodine immediately after birth. We use a spray bottle, and generously soak the entire umbilical cord and navel area. Using a teat-dip bottle, we treat their navels two more times with gentle iodine, once when we feed them their second bottle of colostrum and the other when we ear tag them before they are moved to their outside hutch. A thick umbilical cord is dipped daily until it is completely dried up. We use extra caution because we have found that navel infections are extremely time-consuming to treat, and Joint Ill can be such a devastating disease. It takes only seconds to attend to the navel, and thereby save yourself the long-term treatment necessary to try to resolve an aggressive navel infection.

We sell all of our bull calves to a local business, which requires that they receive an intra-nasal vaccine at birth. In the interests of keeping things

simple, we also vaccinate the heifer calves the same way. However, it can be argued that vaccines administered before one week of age will be ineffective. Therefore, we administer another dose of intra-nasal vaccine to our heifer calves at one week of age.

A final precautionary step is to ear notch every heifer calf within 24 hours. During our first two years, we purchased many animals from all across Wisconsin and Minnesota. They presented us with four BVD-PI (Bovine Viral Diarrhea – Persistently Infected) heifer calves, which were destroyed immediately upon our receiving the positive results. They were born while we were raising our calves in an old barn renovated to house sixty-six calves in individual hutches. The close proximity of the animals within the closed, albeit well-ventilated barn, and the presence of even one Persistently Infected calf, resulted in some devastating outbreaks of disease, from pneumonia to scours. We now have a closed herd, and every animal is ear notched to test for BVD-PI. We send away the ear notches taken from our heifer calves for testing every week, and we have the results back within five to seven days.

We routinely vaccinate every heifer and cow against BVD at 25 days fresh. We have not had a PI calf for over two years, and we are now contemplating ending our practice of ear notching. I will admit, however, that I am nervous about ceasing altogether because of the havoc one PI calf can wreak on an entire herd.

## ■ Feeding Calves Pasteurized Milk

We start our heifer calves on two liters of pasteurized, non-saleable milk, fed twice per day in a bottle. After two feedings, the amount is increased to two and a quarter liters, and that amount is maintained there for four weeks. In our experience, calves undergo a digestive transition between ten days and two weeks of age, and are most likely to experience a bout of scours during this time. We have found they are safely past this by four weeks of age, at which time we increase the amount of milk to two and a half liters. When the temperature is below freezing, we will slightly increase the amount of milk fed. Some nutritionists suggest increasing the ration one and a half times, however, we find an increased incidence of scours among the younger calves at this rate.

We feed newborn calves with individual bottles for the first five days, then pail-train them at six days of age. In our experience, it is much more successful to train a calf that has learned to come to the front of the wire to drink, and that has become accustomed to her living quarters, as well as the routine. This bottle-feeding time also allows us an opportunity to evaluate their strength, and to be sure they are healthy and digestively sound before we attempt to pail-train them. We wear nitrile gloves at all times when feeding

calves. When feeding bottles, and when pail-training, we wash our hands in a pail of hot water with soap and bleach between each calf. This radically reduces the potential to transmit disease from calf to calf on our hands. We adhere to the practice of always feeding from the youngest calf to the oldest calf.

We place a pail with a small amount of eighteen percent protein calf starter in the pail-holder at the front of the wire from day one. They are curious little creatures, and will quickly investigate the contents. The grain is fed to consumption, and is changed every three days, or as necessary in inclement weather. This familiarity with a pail makes it easier to direct their attention to the pail of milk. It is not uncommon for a calf to pail-train herself when she discovers her milk in her pail.

Our rows of hutches are thirty-four hutches long, so we feed a row of calves their milk, and then follow with a feeding of approximately half a gallon of warm water. This allows sufficient time between the consumption of the milk, and the water, for the milk to clot. The feeding of water serves to supply some much-needed extra fluid, which has been proven to increase grain consumption and to aid with digestion. We find it advantageous, as well, to rinse the pails of milk residue. All leftover water is removed at the end of every feeding, and discarded away from the hutch area. We recognize that pouring water onto calf bedding makes their hutches unacceptably wet. Furthermore, discarding it in the alleyways increases the humidity in the hutch area, and also allows for the transmission of disease.

We wean in groups of eleven or twelve calves, beginning the weaning process at approximately nine weeks of age. We cut back to feeding two liters of milk once a day, with only warm water for the second feeding, for one week. After the week, they are fed only water twice a day for five days. After this weaning process, they are moved to an open-fronted shed, where they are housed in groups of six or eight heifers per pen.

Our experience with feeding pasteurized waste milk has been fantastic. The calves grow extremely well, with the average weaning weight at ten weeks being between 102 kg to 114 kg. We believe there are two key components to successfully feeding pasteurized milk. The first one is to be almost fanatical about consistently delivering exactly the same amount every feeding, every day. The second is to meticulously clean all equipment that comes into contact with the milk and the calves. We have a small incubator for on-farm culturing, so I plate a milk sample monthly to make sure our pasteurizer is working properly.



## ■ The Feeding Process

Our waste milk is collected in a five hundred gallon bulk tank that is housed in a separate room in our milk house. Our pasteurizer is also in the room, which allows easy access to the milk. The pasteurization process takes approximately forty-five minutes, and the milk is collected in a stainless steel tank. The tank is mounted on a trailer that is pulled behind an electric golf cart. The milk is delivered with an electric pump, which is hooked up to an electric timer to allow for exact measurement. We monitor the timer's accuracy with a six-pint plastic juice jug. The pint increments are clearly marked with a black felt pen; and, twice during the feeding of each row, the milk is delivered into the pitcher. If the amount is incorrect, a simple adjustment is made to the timer to correct the amount. A plastic hose is attached to the pump, and a white PVC plastic pipe is attached to the hose. We use a thumb-operated brass valve to prevent milk from draining onto the ground between calves. Between each calf, the feeding wand is rinsed in a pail containing a solution of hot water, antibacterial soap and Nolvasan.

A 225 liter plastic barrel for feeding warm water is held on the back of the golf cart. We use a plastic vacuum hose with a plastic gas nozzle to deliver the water. We approximate the amount given to each calf. They will drink much more water if it is offered warm, even in the summer. During the summer and fall when the temperature is above 20°C, a third feeding of water is given at noon. The heifers must have sufficient water to maintain hydration in the heat.

## ■ The Cleaning Process

All equipment that has come in contact with milk is always rinsed first with cold water. Milk and hot water produce milk stone, which then requires a blowtorch to remove. After rinsing, the stainless steel bulk tank is manually scrubbed every morning using a powdered bulk tank cleaner. It is then further cleaned with a liquid soap added to extremely hot water. This is circulated for two to three minutes using the electric pump. The milk delivery hose is attached to a spray ball, which inserted into the top of the tank. After rinsing, the final step is a solution of acid and hot water, which is circulated for two to three minutes, and then rinsed out.

All calf feeding bottles, nipples, water hose and nozzle, plastic jug, plastic feeding wand, brass valve, and any other miscellaneous equipment are washed in hot water with antibacterial soap and bleach. A long-handled brush is used to scrub the bottles and the jug. We allow all items to soak before being removed from the sink, bearing in mind that the disinfecting action of bleach takes up to twenty minutes. The cleaned items are stored,

inverted, in a sink in the pasteurizer room.

After weaning, all pails are scrubbed with hot water with soap and bleach before being assigned to a new heifer. We also pressure wash the hutches, and the wires, and spray them with a powerful disinfectant, before they are used for a new heifer calf. The concrete pad is scraped clean with a Bobcat, and then further scraped with a wide shovel to remove any lingering debris. We try to stay far enough ahead of our arrivals to allow the site to dry, at which time it is limed, and the clean hutches and wires returned to place.

## ■ Bedding

During the late spring, summer and early fall, we bed our calves with sand, both in the hutches, as well as the sheds. This greatly reduces the fly population, and provides a cool place for the calves to lie down. We add sand as necessary, and have discovered that it is necessary to completely remove the sand after about four weeks because it gets too wet. During the cold months, we bed the calves with straw. We try to maintain a clean, dry environment, adding straw as necessary to ensure this. We follow Dr. Ken Nordlund's guideline for bedding, which is to have enough bedding so that you cannot see the calf's legs when she is lying down. We bed both inside the hutch, and outside within the wire. We usually add clean bedding every four to five days. The presence of clean bedding outside encourages the calves to rest in the fresh air and the sunshine.

In the winter, when the daytime temperature is below freezing, we blanket all newborn heifer calves before they are moved outside. The blanket is not put on until they are completely dry. The blankets are removed when there is a break in the temperature. We have never had to leave them on for more than three to four weeks.

## ■ Calf Vaccinations

The best place to begin with disease is prevention. I have already mentioned our dry-cow vaccination program, so I will focus now on our calf vaccination program. Given the age of the animals, there is not really too much that they can be given. Aside from the two intra-nasal vaccinations, we give the calves their first injectable respiratory and BVD vaccine at seven weeks of age. Experts feel that the immune system of calves three to seven weeks of age undergoes a fragile transition time so that their immune response may not be optimal. Finally, three days before moving a weaned group to the open-fronted shed, we give them an intra-nasal vaccine.

## ■ Childhood Diseases

At Shiloh Dairy, we have a calf monitoring system that is based upon the scoring system of Dr. Sheila McGuirk. We begin at five days of age by taking their temperature in anticipation of their being pail-trained the next day. Through trial and error, we discovered that a calf that is sluggish to pail-train probably has a fever. Generally speaking, if a calf is sick before seven days of age, she contracted the illness in the calving pen; and, if a calf is older than seven days of age, she contracted the illness in the hutch. If we have calves getting sick before seven days of age, we will review the birth records, and see who, or what, happened in the calving pen. Aside from the odd dystocia calf, however, we do not have sick calves at this age. We take their temperature again at seven days of age, and administer the intranasal vaccine. After this, all calves are monitored daily for signs of disease such as scours, pneumonia, infected navels, and Joint Ill.

Detecting disease is an art as well as a science. We watch for subtle signs such as a change in activity level, a decrease in appetite, and dullness in their eyes, to the more obvious ones such as diarrhea, snotty nose, coughing, droopy ear, and lameness. Some calves are amazingly resilient, and will have a very high fever before they show any outward signs of illness. Others think they are going to die with only a slightly elevated temperature. We believe that early intervention is definitely advantageous, and results in much less treatment time and recovery time. Basically, we have learned that a healthy calf is a happy, hungry calf. If they are not happy and hungry, something is wrong, and a thermometer is the greatest tool with which to start the investigative process.

We have digital thermometers that are held in a nylon pack that clips around the waist. We carry rubbing alcohol soaked paper towels to disinfect the probe after every calf. We also take along a small plastic pail with hot water, soap and Nolvasan for rinsing our hands. A plastic toolbox is used to hold all of the medicines and the equipment we use most commonly. This allows for easy transport, easy access, and saves time in our not having to return to the calving office for a forgotten item. We always start with the youngest calves first so we are not tracking disease from the older calves into their hutches. We do our best to avoid contaminating our boots when we are assessing a calf, and we will use plastic boot covers whenever necessary. Three times we have had a Salmonella outbreak at the dairy, and during these times, we changed boot covers after every calf.

## Scours

I am sure I do not have to remind you that the most common disease of baby calves is scours. At our dairy, we never lose a calf to scours, and we never

experience scours beyond a slight nuisance level. I believe that our dry-cow vaccination program arms our calves with terrific immunity, and that our ongoing consistency in the feeding program, and our vigilant observation of each calf, allows us this tremendous success. Calves are never taken off milk when they are scoured. When they are sick, it is not the time to starve them. Even though they have diarrhea, they still absorb nutrients from the milk. At the first sign of loose stool, we add a product called "Bio-Pect" to their milk twice a day. We also take their temperature daily, and treat calves with a fever of greater than 39.3°C with two SMT (Sulfamethoxazole Trimethoprim) tablets twice per day for three days. A smaller-sized black plastic balling gun is used to administer the tablets. It is rinsed in a solution of hot water, soap and disinfectant after each calf. We will supplement scouring calves with a bottle of ReSorb if necessary, but we have found that immediately identifying and treating according to our protocols has all but eliminated the need for extra fluids. Furthermore, a calf with a digestive upset will often refuse her afternoon milk after a supplementary oral electrolyte feeding, even though the water was fed five hours earlier.

We use coloured clothes pegs, which are clipped onto the front of the wires, to identify the calves on treatment. A pink clothes peg signifies Bio-Pect, and a blue clothes peg signifies SMT tablets. This makes it very simple to identify which calves need their tablets in the afternoon, and which calves need Bio-Pect at feeding time. The same plastic jug used to monitor the accuracy of the timer is used to mix the milk and Bio-Pect. We stir the mixture with a plastic whisk, and pour it into the calf's pail. This also serves to avoid contacting the sick calves with the feeding wand.

## **Pneumonia**

Wisconsin's humid climate seems to provide the perfect conditions for pneumonia in calves. Despite a robust vaccination program, individual outside hutches, and ample bedding, pneumonia is our biggest ongoing challenge. We use our thermometer to determine when a calf needs to be treated. The break point is 39.4°C, although a calf with only a slightly elevated temperature that also has a snotty nose, or who is coughing, will be treated. These protocols follow Dr. McGuirk's wise guidelines. We do not see any reason to wait until the calf is extremely ill before intervening. We choose from among several antibiotics, depending upon the severity of the illness, as well as using ReCovr and Flunixinamine (Banamine). Calves with a temperature greater than 40°C are also given a bottle of ReSorb once a day to help to reduce the fever.

## **Salmonella**

Every calf-raiser's worst nightmare. We use Agri-Lab's Salmonella Newport Bacterial Extract, more commonly known as SRP (Siderophore Receptors

and Porins), in all pregnant animals, starting at 225 DCC, with a booster at 265 DCC. While this by no means guarantees against a *Salmonella* outbreak, we believe it certainly mediates against a severe, deadly outbreak. As well, there is some passive transfer to the calves through colostrum.

The most obvious symptom of *Salmonella* in calves is a very high fever, usually 40.5 – 41.7°C. We have found that we must treat very aggressively in order to save calves stricken with this wretched disease. The *Salmonella* infections we have encountered have caused severe pneumonia. Within 24 hours, a calf will have an extremely high fever and will be lethargic and anorexic. It is not uncommon to have to resort back to bottle-feeding very depressed calves. We use antibiotics, Flunixinamine and ReCovr, as well as oral fluids if the calf will consume them. We will use IV fluids for calves that have a high temperature for more than three days. The calves tend to lose weight rapidly, and we will leave them on milk for an extended period of time if they are not in good flesh at weaning time.

Clearly the containment of the disease is of paramount importance. This is where limiting the number of people handling the animals is wise, as well as changing gloves and boot covers between calves. We always treat the sickest animals last. Calves that were nursed back to health tend to be indistinguishable from their herd mates within a couple of months.

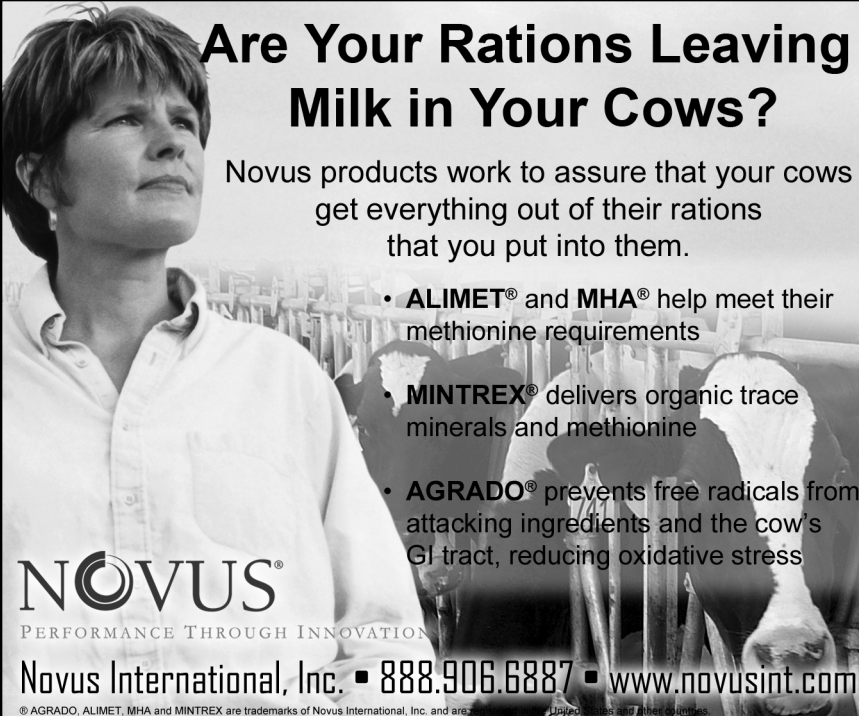
### **Joint Ill**

A well-dipped navel is no absolute guarantee against a navel infection, and not all navel infections are manifested by an enlarged umbilicus. We have learned that it is possible to have an internal infection, which then leads to the tell-tale inflamed, painful joint. In these rare, albeit serious instances, we choose long-term antibiotic treatment, and also use Flunixinamine for at least five days. An enlarged umbilicus is carefully examined to differentiate between a hernia and an infection. If it is an infection, we drain it by lancing, and dip it with gentle iodine daily until it is healed.

## **■ In Conclusion**

We believe that minimizing death loss begins with the prevention of disease, and that when a calf is exhibiting any signs of disease, immediate intervention is crucial. The calf-raising program is not the place to look for cost-saving opportunities. They are baby calves for a relatively short period of time, during which one has the opportunity to lay the foundation for their future career as a dairy cow. The calf-raising program at Shiloh Dairy has provided our business with an abundance of replacement heifers. With the goal of having an excellent quality, registered herd, we have been able to sell some of the grade heifers, and plan on future heifer sales. As well, we anticipate

sufficient replacements to allow us to sell less productive milking heifers and cows. It has taken us three years of investment in the heifer program to reach this point; however, the payback has begun, and the rewards will be experienced on many levels.



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