A Business Plan for a Custom Dry Cow Transition Facility and a Calf Ranch

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Abstract

In recent economic times the dairy industry has witnessed historic lows in milk price and historic highs in feed prices. As a result many dairies have been forced out of business or have found other ways to diversify in order to offset the accumulated debt from dairying. One possible way a dairy can minimize debt is by sending its transition cows to custom transition cow management facility from dry-off through freshening. This management facility would give optimal care and attention to these cows to ensure metabolic and post calving health issues are minimal and that cows are returned to the dairyman ready to be put in the milk string. In addition a dairy can milk 13% more milk cows with the extra space and increase its milk production. This business plan is a feasibility study to determine if this sort of operation can serve as a way to diversify by providing a service that cash flows and generates revenue. This study shows that contracting to manage dry cows from roughly 65 days prepartum to roughly 14 days fresh and raising heifer calves until 120 days old for other dairymen has the potential to be a profitable endeavor. Results suggest that the proposed operation could be financially viable for both contracting dairy producers and the business operator.

Key Words: transition cow management, dry cows, raising heifer calves, feasibility study
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Introduction

With the high level of volatility in the dairy industry today, many dairymen are looking for ways to cut costs and run their operations as efficiently as possible so that they can maximize their profitability. This business plan outlines a way to provide dairymen with an opportunity to reduce their costs, improve their herd health and increase net profit. It involves contracting with other dairies to manage their transition period animals (dry-off through post-fresh) and subsequently raising their calves. This service would be particularly appealing to dairymen who milk fewer than 1000 cows, because of the justification to add the required labor and resources to dedicate 24 hours of care in this area. Contracting out transition cow management also allows a dairyman to milk an additional 13-15% more cows, while using less labor. This would reduce their hospital pen size, and medicine use significantly. A dairyman could virtually eliminate all outside labor, other than a feeder. He or she could have a contract breeder and utilize his or herself or an assistant type herdsman to oversee milking, reproduction, treating, and record keeping. The real benefit would be higher fresh-cow peak production, and overall conception due to intense cow-care during the most critical and stressful period of a cow’s lactation. This plan calls for converting a current 600 cow dairy facility into a custom transition facility and calf-raising site. Since an average dairy has 13 percent of its cows dry at all times and this facility only has room for 600 transition cows, the number of dairies to contract with can vary. This facility can manage the transition cows and calves of four 1,100 cow dairies or one 4,400 cow dairy. However, considering this service would be more appealing to smaller dairies with fewer resources, contracting with
a few small dairies would likely be the scenario. A flat rate will be charged per head per day for the cows from transition all the way through freshening and a separate rate will be charged per head per day for the calves from birth until 120 days. The service provided would involve the following:  ❙ weekly picking up new cows to dry and returning fresh cows 14-21 days in milk. Upon arrival, cows would be vaccinated, have milk samples taken (identify any staph or myco), dry tube treated, hoof trimmed, and put on a far-off ration. At 3 weeks prepartum they would be vaccinated and moved onto a close-up ration. One week before calving they would be moved into small group calving pens. All animals would be monitored 24 hours per day. Upon calving, all calves would be tagged with corresponding dairyman’s ear tags. Strict protocols involving colostrum feeding and calf care would be administered. This system would work to ensure less than 1% death loss. Fresh cows would be put on a high quality fresh-cow ration and milked for a minimum of 2 weeks. Milk samples would be taken at freshening again, and cows would be monitored daily. Daily monitoring would include taking temperatures and treating with Excenel®, propylene glycol, rumen boluses, etc. depending on the cow and its health condition. All fresh cows would be palpated to determine if they are clean and healthy. The cows would then be vaccinated and returned to dairymen.
Review of Literature

Dry Cow Management

Before starting such an enterprise it is necessary to do some research on the most effective ways to go about managing a healthy transition herd and raising prospering calves. When managing dairy cattle for other people attention to detail is crucial as dairymen expect to see results. When running a custom operation of this kind, the main goal is to return healthy fresh cows, free of any metabolic disorders or uterine infections that are ready to enter the milk string. In addition calves are expected to main a growth rate of at least 2 pounds per day while on the facility and returned healthy.

When managing and overseeing dry cows much attention must be given, especially during the transition period. The transition period of a dairy cow is the most important time frame of a cow’s lactation. This period refers to three weeks prior to calving and three weeks post calving. It is a crucial time frame not only because of the onset of calving, but also because this is the time when the cow is the most susceptible to metabolic disorders that can have lasting effects on lactations to come. These disorders come about because of the hormonal and metabolic changes that are orchestrated by the cow to initiate calving and milk production. Nutrient requirements for the growing fetus increase significantly during the last trimester of pregnancy. However, dairy cows tend to go off-feed during the three weeks prepartum. With nutrient demands for the fetus increasing and feed intake decreasing, most cows enter into a period of negative energy and protein balance prior to calving. Cows have been shown to decrease their feed intake by as much as 30-35% (Grummer, 1996). Some other factors that indirectly increase the risk of metabolic disorders are over-conditioning at calving, management, and
environmental stress. Over conditioned cows are considered greater than or equal to 4 on a five point body condition scale and are at a greater risk of developing peri-parturient health problems than normal cows (Ingvartsen 2005).

The metabolic disorders that can occur as a result of the negative energy balance and stress the cow undergoes are as follows: hypocalcaemia, ruminal acidosis, ketosis, displaced abomasum, metritis and a retained placenta. Hypocalcaemia, also called milk fever, occurs when a cow undergoes a calcium imbalance as a result of giving birth. Giving birth dictates a calcium drain for milk production. A cow producing 22 pounds of colostrum can lose up to 23 grams of calcium in a single milking (Grummer, 1996). Dietary cation anion difference (DCAD) can also influence this disorder. Reducing DCAD in the ration will decrease the risk of milk fever (Mulligan et al, 2007).

Acidosis is an imbalance in the acid-base system of the cow. Acid conditions can occur in blood, the rumen, or both. Blood pH is normally 7.4 and has little variation whereas rumen pH varies considerably. Rumen acidosis is defined as rumen fluid pH being below 5.5.

Ketosis is a common metabolic disorder that can have a herd incidence risk as high as 70% (Ingvartsen, 2005). It is characterized by high concentrations of ketone bodies and a low concentration of glucose in the blood. Primarily seen in the first month of lactation, ketosis can occur as a result of underfeeding, over-condition, and being in a negative energy balance for long periods of time.

A displaced abomasum occurs most frequently in high yielding, late lactation dairy cows within four weeks postpartum. Low feed intake prior to calving and a rise in concentrate/roughage ratio of the feed in late pregnancy and early lactation increases the
risk of attaining a displaced abomasum considerably. Increasing the nutrient supply three weeks prepartum is recommended to ensure that the nutrient demand of the cows is met (Ingvartsen, 2005). Retained placentas are largely a result of dystocia, but are also due to high plasma fatty acid concentrations and reduced feed intake in the cow prior to calving.

Feeding the appropriate ration can prevent many of these metabolic disorders. Increasing the nutrient density in the diet can offset the reduction in feed consumption by the cow prepartum. The reduction of fiber in the prepartum diet can increase the development of rumen papillae and increase the capacity for volatile fatty acid absorption from the rumen. Development of the rumen papillae plays a major role in minimizing ruminal volatile fatty acid accumulation, reduction in ruminal pH, and likelihood of acidosis when high grain lactation diets are introduced after calving (Ingvartsen, 2005). Increasing the energy density of the diet with supplemental fat can reduce the incidence of fatty liver and ketosis.

Feed additives can also have significant effects on a cow’s postpartum health. Niacin reduces fat mobilization from adipose and can be used to prevent ketosis. Propylene glycol can also be used to prevent ketosis. The liver converts this product to glucose, which increases the amount of insulin in the blood. Insulin reduces fat mobilization by acting on adipose tissue (Grummer, 1996). Research shows that DCAD can be of a higher value than calcium intake for controlling milk fever. Diets with a positive DCAD create an alkaline blood and urine pH and tend to cause milk fever. Diets that have negative DCAD are acidic and usually prevent milk fever. The equation for calculating DCAD is: meq [(K+Na)-(Cl+S)]/100 g dietary DM. Decreasing DCAD in the ration during the final weeks prepartum can have positive effects on acid-base balance,
plasma calcium pools, incidence of milk fever, and postpartum health and reproductive performance. Avoiding forages that are high in potassium and buffers in the prepartum diet are the two best ways to minimize DCAD (Ingvartsen, 2007). Feeding concentrate during the final two to three weeks prepartum would benefit the cow by adapting the rumen to high starch diets and providing more energy during a period when feed intake normally declines. “Recommended diet specifications for the transition cow consuming 10.0 to 10.4 kg DM/d are 14 to 15% CP, 33 to 38% undegradable intake protein (% of CP), 1.50 to 1.59 Mcal NEI/kg, 25 to 30% minimum ADF, 35% to 40% minimum NDF, and 30 to 35% nonfiber carbohydrate (28)” (Grummer, 1996).

**Calf Raising**

Heifer calves are the foundation of the future milking herd for most dairy farms. According to Fox, the five key management factors needed to promote optimum health and production of dairy calves on today’s operations are colostrum, calories, comfort, cleanliness, and consistency (Fox, 2007). From birth to weaning calves are at the most sensitive ages of their lives and are at the greatest risk for mortality. Effective management practices and protocols are a necessity to ensure a prosperous livelihood for the calf and a healthy herd for the dairyman.

Heifer calves need to absorb enough maternal antibodies to achieve adequate passive transfer. Colostrum is the first meal a calf should consume (Fox 2007). The dam makes colostrum from 3-7 days after calving (Rulofson et al, 1993). If colostrum is not directly administered a heifer calf will have failure of passive transfer (FPT) (Fox 2007). The quality of colostrum, quantity fed, and timing of colostrum feeding determine the
acquisition of passive immunity and resistance to disease prior to weaning (Quigley 1997).

The average calf will nurse naturally 6 to 8 times in a 24-hour period. In recent times 24 hours was considered the benchmark timeframe for allowing sufficient levels of IgG absorption through the gastrointestinal tract, known as pinocytosis. Research is now telling us that the ideal timeframe for pinocytosis is 12 hours or less. How the necessary nutrients are supplied to the calf dictates how successful growth, weaning, transition, pregnancy and milk production will be. Without colostrum the calf is at significant risk of increased morbidity, death, and substandard performance. Ingesting colostrum into a newborn calf as soon as possible is key to prepping the calf before it is exposed to harmful pathogens. Each calf should consume around 8-10 % of its body weight in colostrum in the first 24 hours after birth. A calf should consume 4-5% of its body weight within 12 hours after birth, but preferably within 2 hours. For an 85-pound Holstein calf this would amount to around 3 quarts of colostrum (Rulofson et al, 1993).

More important than the amount of colostrum is the quality of colostrum. An adequate amount of serum immunoglobulin G (IgG) must be consumed by the calf. The suggested amount of IgG in the serum of calves by 24 hours after birth is 10 grams per liter. Most of the calf’s resistance to disease is dependent on serum IgG, which is why having adequate amounts of it in colostrum is important.

A calf should continue to be fed colostrum up to three days after birth. The efficiency of absorption of IgG in calves is 35-50% at birth (Fox, 2007). Without testing with a colostrometer or direct measurement of antibodies, it cannot be determined what level of IgG the colostrum contains. To make sure the calf is receiving sufficient amounts
of IgG without testing the colostrum, giving four quarts of colostrum at birth is the best way to ensure the calf is getting the nutrients it needs. However, if the colostrum is tested and adequate levels of IgG are present then two liters will suffice. Calves can also be blood tested to know exactly what their IgG levels are. This is the best way to make sure they are being fed correctly.

Another factor that should be considered when feeding calves is weather. The thermo neutral zone for calves less than one month in age is between 50 and 75 degrees Fahrenheit of ambient temperature. For every 1 degree Fahrenheit drop in ambient temperature below the thermo neutral zone, maintenance energy increases by 1%. What this means is that if the temperature is 0 degrees Fahrenheit then the calf should receive 50% more energy for maintenance (Fox 2007).

Feeding calves by bottle and nipple is the most effective as it regulates the time and amount of colostrum, which calves are fed. An esophageal feeder is another method of providing colostrum to calves. This tool is effective when dealing with calves that refuse to feed or do not consume an adequate amount. However, problems with this device are the potential to deliver colostrum into the rumen and possibly into the lungs. It is recommended that this method of feeding is used only when the calf is not cooperating when being fed with a bottle and nipple (Quigley 1997). Although newborn calves have an easier time feeding from bottles, older calves can quickly adapt to drinking out of a shallow bucket (Rulofson et al, 1993). This also makes feeding a large group of calves more efficient. When feeding colostrum or milk, the temperature of the liquid is important. The temperature should be 100-105 degrees Fahrenheit (Fox 2007). Feeding at this temperature makes it easier for the calf to regulate its body temperature and makes
suckling easier (Rulofson et al, 1993). In addition feeding at a lower temperature can increase the likelihood of bloat. Using nipples that are worn out or have holes that are too large can contribute to bloat as well (Fox 2007).

Calves should continue to be fed whole milk or milk replacer at a rate of 8-10% of the calf’s body weight for the first four weeks of the calf’s life. Calves are creatures of habit and should be fed on a consistent feeding schedule of two equal feedings per day. Single feedings can increase the risk of attaining scours because of the high intake of total solids during a short single meal. Scours are the leading cause of pre-weaning mortality as 62% of deaths are a result of this sickness (Rulofson et al, 1993). In addition to feeding milk twice daily, water should be available to the calf at all times.

The first dry feed offered to calves is starter. Starter can be pelleted concentrate or grain mix. This feed should contain 75-80% total daily nutritional requirements and 15-20% crude protein. Starter promotes development of the calf’s rumen and provides nutrients for growth (Rulofson et al, 1993). Most commercial calf starters include B-vitamin supplementation to provide calves with a source of B-vitamins before the rumen begins to produce them on its own. Many starters also contain coccidiostat that provide protection against coccidial infection. Some examples of commonly used calf starters are Bovatec®, Deccox®, and Rumensin® (Quigley 1997).

Once calves are consuming around 2 pounds of starter per day, they are ready to be weaned off of milk. Depending on the operation, most calves are weaned between four and eight weeks of age. The sooner weaning can be done the more efficient it is for the operation because feed and labor costs become reduced (Rulofson et al, 1993). Two types of weaning processes that exist are abrupt and gradual weaning. Abrupt weaning is done
by ending milk feeding at once. Gradual weaning is accomplished by reducing the amount of milk offered for a period of time before completely ridding the calf of milk. This is commonly done by reducing the number of feedings from twice daily to once daily for five to seven days before completely removing the milk. Gradual weaning is considered to be more effective as it stimulates dry feed intake while still allowing the calf to obtain nutrients. It also reduces the stress associated with abrupt weaning (Quigley, 1997). Stressful events such as dehorning, castration or removal of extra teats, vaccinations, and change of grain should be avoided during weaning to reduce the chances of slumps (Fox, 2007). Events such as dehorning are most commonly done around week 8 with the use of a hot iron (Fulwider et al, 2008). The weaning/transitioning pen has a major impact on the success of a calf-rearing program. Many problems such as bovine respiratory disease and coccidiosis outbreaks can occur. Headlocks in the first transition pen should be avoided unless calves were previously raised in headlock-adapted individual pens (Fox 2007).

Before calves are weaned and placed into group pens, calves should be housed in individual pens. Calf housing should include ventilation, isolation, comfort and economy. Calves should be kept dry, free from drafts, and away from pathogens at the lowest cost possible. Isolation keeps the contact among calves to a minimum, which reduces the spread of disease causing pathogens. The most economical way to isolate calves individually is to place them in hutches. Isolation helps with the observation of the calves and makes it easier to provide more individual attention to each animal. Calves should be isolated until about two weeks after weaning when they can then be transferred to group pens. Calves should have easy access to feed and water, a dry environment and protection
from extreme weather while in the hutches (Quigley, 2007). In between calves all bedding should be removed and new bedding should be put into place. Hutches should be cleaned, sanitized and placed on new ground before being utilized by another calf (Fox, 2007).

Calves should be observed daily for signs and symptoms of sickness and disease. They should be isolated and treated immediately so that the infection does not spread. Regular use of a rectal thermometer is an effective way to detect calves with fevers. The best treatment for scours is replenishment of vital fluids and electrolytes.

**Fresh Cow Management**

Fresh cows represent the greatest income potential for dairy operations. However this postpartum period also represents the time when a cow is most susceptible to attaining metabolic disorders, an infected uterus, and a fever to name a few, as a result of stress from pre-calving carried into freshening (Kirkpatrick, 2008). Many of these sicknesses acquired during the fresh period can have lasting effects on milk production and reproduction for the duration of a cow’s lactation or even its life. Having a strict fresh cow program in place can have significant benefits on the health and profitability of a herd.

Over the past several years there has been more focus directed at fresh cow management. The main point of focus has been early detection of sick fresh cows using an electric thermometer so that they can receive immediate medical attention before conditions worsen. Although temping practices have some benefit, there are greater opportunities in a fresh cow program with a more complete, intense, and proactive management process (Aalseth, 2005). Dairy cattle genetics contributes about thirty
percent of the productive potential to a dairy. However, the environment provided by management delivers the remaining seventy percent of this potential. In the early 1990’s it was discovered that left displaced abomasums can be fixed sometimes without surgery. The alternative approach was a 5-10 gallon oral drench with 100 grams of calcium, 12 ounces of propylene glycol, probiotics and a complex electrolyte package. This was directed at hypocalcaemia induced LDA’s and ketosis. Injectable drugs included D-panthenol to stimulate gut motility. The calcium would tone up the gut muscle and the D-panthenol would create contractions to push the gas out of the abomasum. The keys to a successful outcome were early detection of the LDA before other secondary complications became severe. In addition, diagnosing the primary cause of the LDA such as hypocalcaemia, toxic metritis, pneumonia etc. And finally, effectively treating not only the primary diseases but also the secondary problems was the last key to success (Aalseth, 2005). From several years of success with this approach dairymen have learned that aggressive, early intervention is the key to keeping cows on track to a more productive lactation.

The most important ingredient to fresh cow health is a separate pen for them for the first 10-14 days in milk. Having fresh cows intermixed with other late lactation cows makes it challenging to find them for evaluation. With intense evaluation and treatment of fresh cows, ninety five percent are ready to join the rest of the milking herd by 10-14 days in milk.

Another valuable reason for a fresh cow pen is to stimulate dry matter intake. Fresh cows and especially heifers do not compete well with longer days-in-milk cows for feed. A fresh cow pen should be stocked at no more than eighty five percent density. At
any time on a commercial dairy about 4.1 percent of the entire herd inventory will be in
the fresh pen of a typical dairy with a 13.5-month calving interval. For maximum benefit
its worthwhile to separate fresh heifers from fresh cows for better performance. Dry
matter intake should be between 40 and 45 pounds for a fresh pen of one-third heifers and
two-thirds cows (Aalseth, 2005).

Measuring a cow’s rectal temperature is not always an adequate representation of
her post calving health. A fresh cow’s metabolic status is just as important as her
infectious disease. Many fresh cow programs are based on cows with rectal temperatures
greater than 103.5 degrees Fahrenheit. Cows exceeding this temperature are chalk
marked as abnormal and treated with medicines such as Naxcel or Excenel. The next day
they are treated again depending on their temperature. This simple program is effective,
but may only capture 50 percent of the available cow health opportunities. This is
because rectal temperatures are not always accurate indicators of infection. A rectum full
of air will give a colder temperature than the actual temperature of the cow. It is
recommended that the vagina be used as an alternate site using a clean probe. Taking
temperatures at the same time each day will give more consistent results. The best time of
day to take temperatures is in the morning because the effects of weather are limited.
Cows with hypocalcaemia have body temperatures that are colder than normal except in
hot weather. Therefore a hypocalcaemia cow should not be expected to develop a body
temperature that accurately represents the severity of her infection. This also applies
when identifying and treating cows with toxic metritis. It is important to identify and treat
cows having toxic metritis whether they have temperatures above or below the normal
average temperature. The readings from rectal temperatures are even more confusing
when dealing with cows that are shocky from rumen acidosis. Essentially when cows are found with rectal temperatures that do not coincide with qualities of various diseases, they are seen as containing more than one problem and treatments are intensified (Aalseth, 2005).

The next level of response to help fresh cows is performing a thorough physical exam of any cow that does not look normal or contain a normal temperature. To have a consistent and effective fresh cow program it is necessary to develop a protocol for examining and treating fresh cows. A cow exam starts with a visual evaluation. A good place to begin this evaluation is by assessing the cow’s attitude. Looking for signs of depression, such as discharge from the nose, can indicate a respiratory disease. A cow reluctant to lock up could also be due to illness. Next, assess the cow’s appetite. Compare her intake to her neighbors. If she is not eating then she may have some kind of digestive disorder such as a DA and a thorough physical exam is necessary. The cow’s eyes and ears should be assessed next. If a cow’s eyes are sunken, dull or crusty then she may be dehydrated or indicating a pain response. Ears that are cold may indicate the onset of hypocalcaemia and ears that are drooping may be an indication of depression from illness. Udder fill should be examined and compared among cows, as it is a good indicator of how well the cow is feeding and producing milk. The tail carriage of a cow should be observed to indicate signs of illness. A raised tail head and straining can be a sign of uterine inflammation and/or aggressive metritis. It can also indicate signs of vaginal tearing (Kirkpatrick, 2008). Rectal temperatures should be taken and recorded frequently and cows with temperatures below 101 degrees Fahrenheit or above 103 degrees Fahrenheit should be of concern. An effective physical exam starts with a
stethoscope. The lungs, heart and rumen should be checked first. Next, the right and left side of the abdomen should be checked for a displaced abomasum. Lastly, the cow is palpated. The uterus should be palpated and any vaginal discharge should be examined to determine the possibility of a uterine or vaginal infection (Aalseth 2005). If a cow has afterbirth retained after 12 hours since calving, it is considered a retained placenta. A cow that is off feed, down in milk production and has an odorous or discolored discharge is classified as a simple retained placenta. The manure should be evaluated to find any signs of infection or metabolic disorders in fresh cows. Manure that is watery and shows evidence of blood or a fetid smell could be an indication of disease (Kirkpatrick, 2008).

The most prevalent problems in fresh cows on most dairies are toxic metritis, hypocalcaemia, mastitis, acidosis, pneumonia, and salmonellosis. These diseases cover 95 percent of fresh cow illness on a dairy. Secondary complications of DA’s and ketosis occur at the same time as part of a disease complex. Administering a full dose of Exenel or Naxcel therapy for three days is effective since is has a broad-spectrum effect. It can be effective in treating toxic uterine infections, pneumonia, and salmonella type diarrheas. Any cows with hypocalcaemia should be treated with a 100 gram oral dose of calcium. Some other treatments used on fresh cows are aspirin for toxic infections, Predef 2X Sterile Aqueous Suspension for ketosis, dexamethasone for calving paralysis, vitamin B complex for appetite, and vitamin ADE for the vitamin D influence on calcium metabolism (Aalseth, 2005).

The cow’s response to treatment therapy should be based on daily follow up exams. Tracking the variation in daily rectal temperatures provides a better evaluation of treatment decisions. A toxic metritis cow whose temperature has not been reduced in 48
hours by Exenel should be switched to a beta lactam treatment and given more attention while in the hospital. The more skilled a herdsman is at reading the health status of cows, the better he or she is at deciding which cows need antibiotics and which can afford to wait until the next day’s exam. At 10 days in milk, the cows in the fresh pen that are healthy and look normal after daily exams are candidates to be moved to the standard milking strings. The uterus of every cow should be checked one more time for toxic infection before leaving the fresh pen. One of the easiest ways to detect a uterine infection is by the foul smell coming from the infected cow. The white pus of pyometra is not considered a uterine infection. Cows that still contain toxic infections should be delayed from being put into the milk string and should be treated in the hospital with beta lactams and other supportive medicine. Other uterine treatments that assist in recovery include prostaglandin F-2, and Lutalyse Sterile Solution on days 12, 26, and 40 in milk (Aalseth 2005).

A fresh pen not only makes it easier and more efficient to detect postpartum health problems, but also allows an opportunity to implement management procedures aimed at preventing or reducing the severity of postpartum problems. There are several disease prevention protocols that can be implemented to make an effective fresh cow program. Every fresh cow should receive one pound of calcium propionate and twelve ounces of propylene glycol immediately after calving. This prevents any dry matter intake/energy intake and/or mineral metabolism problems that go undetected in the close-up pen. Another proactive tool is to conduct prescheduled rectal exams on all cows at 4, 6, 8, 10, and 12 days in milk to detect toxic uterine infections that are undiscovered by other exams and hidden by the normal temperatures of subclinical hypocalcaemia and
rumen acidosis. Palpation starts at 4 days because this is usually the first detectable onset of metritis (Aalseth 2005).

Successful fresh cow programs also have good computer records that are updated as fresh cow exams are conducted. Sufficient record keeping insures that cows are not accidentally missed for an exam and that all follow up treatments are done in a timely manner. Good records also provide disease incidence information that can be used to evaluate a herd’s transition period management. Good portion of the outcome of a cow’s lactation can be decided during the fresh period with good management procedures. If there is a high number of hypocalcaemia cases during a certain period then it may be time to evaluate the close-up feeding program. A high incidence of ketosis and fatty liver problems could result from problems with energy intake of the close-up and fresh cows. A high incidence of fresh cow mastitis could be linked to the entire dry period regarding how cows are dry treated, vaccinated, fed and housed (Aasleth 2005).

In conclusion, there are four main benefits of an effective fresh cow program. They are as follows: 1. Reduced involuntary death losses 30-60 days post freshening; 2. Decreased postpartum sickness; 3. Improved reproduction; and 4. Higher milk yields. The largest increase in milk production should be seen at peak of the cow’s lactation curve with an addition of eight to nine pounds. In addition death loss should not exceed 5 percent and LDA’s should not exceed 1 percent.
Materials and Methods

Methods

My family owns and operates Fernjo Farms, which currently milks 2,200 cows on three separate facilities. One of the three facilities is an open corral dairy built to house 750 milk cows, 320 heifers, and 112 calves. This dairy will be modified and used as the transition facility for my custom operation. The current cows and young stock housed on the dairy will be transported and dispersed amongst the other two facilities or moved to an alternate facility nearby that Fernjo Farms will rent. I will rent the newly modified transition facility from Fernjo Farms. Based on the layout of this facility and the current pen capacities I will house 600 transition cows on site. Of this 600, 475 cows will be dry and 125 cows will be fresh and lactating on average. Based on the Tulare County average days of dry-off, cows are dried at 65 days prepartum. From this you can assume that there will be an average of 10 calvings per day (600/65). However, some dairies dry-off their cows as early as 55 days and as late as 70 days. The days prepartum at which cows are dried will be up to the dairyman. Since calves will be raised for 120 days, it can be estimated that there will be 1,200 calves on site at a time. Six hundred calves will be in hutches and 600 will be housed in group pens. Bull calves will be purchased from the dairymen and raised on the same facility until 120 days when they will be sold to the feeder market.

Cows will be picked up and brought back to the dairymen once per week. If managing transition cows and raising calves for three dairymen then dry cows will be picked up on each dairyman’s designated dry-off day. In addition, any 14-17 day fresh cows, and 120 day calves will be returned to the dairyman at the same time as new dry
cows are picked up. If contracting with three dairymen who have three different dry-off
days, then cows will be picked up and delivered three days per week. This process makes
transportation as efficient as possible.

Before new dry cows are picked up, a milk sample will be pulled from the
contracting dairy’s bulk tank to make sure there is no mycoplasma or staphylococcus in
the herd. Since dry cows from different dairies will be picked up together in one round
trip sampling the bulk tanks on the dairies ahead of time will provide insurance against
cross contaminating cows from different dairies with an unwanted disease. When cows to
be dried arrive at the transition facility they will be identified and put into computer
system immediately. The dairy comp files on these newly acquired cows will be
transferred from the dairies where they were picked up to the dairy comp files at the
transition facility. Cows will then be tagged, a second milk sample will be pulled on each
individual cow to test for mycoplasma and staphylococcus aureas, and teats will be
cleaned and disinfected before dry tubes are inserted. Milk sampling will be done in-
house. Orbacil® will be used following the insertion of dry tubes to seal the teats. The
cows will then be vaccinated and hoof trimmed before being put into pens.

Once in the transition pen, dry cows will be put on a far-off ration. The cows will
be separated on the facility by the dairy they came from and a colored ankle bracelet and
colored ear tag correlated to that dairy. Each cow will have a management number for
this operation to make record keeping, management, and identification of cattle as simple
as possible for the employees and myself. At 21 days prepartum, cows will be vaccinated,
moved into the close-up pen, and fed a close-up ration with anionic salts and low
potassium DCAD hay to prevent metabolic disorders and other health problems after
freshening. Cows will be moved into close-up pen and calving pen daily based on visual signs and due date according to dairy comp. All cows will also be locked daily and visually inspected to identify signs of sickness or being off-feed. The calving area will be covered with calcium limestone for disinfection and bedded with almond shells and rice hulls. The bedding will be changed as needed. The current Fernjo Farms facility layout and the newly modified transition facility layout can be seen below (Figure 1 and 2).
Figure 1. Current Facility Layout
Figure 2. Modified Transition Facility
Upon calving a 3 quart bottle of colostrum will be given to heifer calves and a 2 quart bottle will be given to bull calves. Heifer calves are to receive 6 quarts of colostrum within the first 12 hours after birth. Heifer calves will have their navel dipped with iodine and will be tagged with ear tags specific to the dairy they will be returned to before being placed in hutches. Fresh cows will be placed in the hospital pen upon calving where they will begin milking three times per day. Cows will receive one pound of calcium propionate and 12 cc’s of propylene glycol on the first day of freshening. Cows will also receive a 10 cc vitamin B shot and one fresh start bolus with probiotics, vitamins and minerals. In addition milk samples will be pulled to check for mastitis, mycoplasma, and staphylococcus. Cows containing retained placentas after 24 hours will be given 20 cc’s of Exenel® and will remain in hospital until healthy. All fresh cows that are clean and healthy on day two will be moved to the fresh cow pen where they will be fed a fresh cow ration. Fresh cows will be locked daily to check body temperatures and look for visual signs of sickness such as a fever, metabolic disorder, or an infected uterus. Any temperatures above 103°F or below 101°F will be of concern and treated accordingly. Cows will remain in fresh pen for at least 14 days before being returned to the dairyman. The milking parlor is one-sided, 16 stall flat barn. It will be equipped with a back flush system so that the milk machines are rinsed with a sanitizing solution between milkings for biosecurity purposes. In addition standard milking procedures including latex gloves, pre-dipping, stripping and wiping will occur. Cows that still have health issues at 14 days will remain at the transition facility until they are healthy and ready for return. Before fresh cows are returned they will have been vaccinated, completed involution, and will be
free of any health issues. The far-off, close-up, and fresh cow rations can be seen below (Figure 3).

Figure 3.
Transition Cow Ration

![Transition Dairy Table]

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Daily lb/cow</th>
<th>Fresh Diet</th>
<th>Close up</th>
<th>Far Dry</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.88% CORN SIAGE</td>
<td>$366.00</td>
<td>22.87</td>
<td>25.08</td>
<td>47.84</td>
</tr>
<tr>
<td>34.74% WHEAT SIAGE</td>
<td>$558.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89.72% ALF HAY EAST B</td>
<td>$285.00</td>
<td>10.00</td>
<td>47.84</td>
<td></td>
</tr>
<tr>
<td>23.00% WHEY</td>
<td>$38.00</td>
<td>8.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00% ALMOND HULLS</td>
<td>$139.00</td>
<td>6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.50% PRO 29</td>
<td>$39.00</td>
<td>4.00</td>
<td></td>
<td>14.00</td>
</tr>
<tr>
<td>86.00% FLAKED CORN</td>
<td>$315.00</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00% WCS</td>
<td>$390.00</td>
<td></td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>35.00% WET DISTILLERS</td>
<td>$119.00</td>
<td>6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91.07% HIGH MIX</td>
<td>$384.00</td>
<td>7.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00% CANOLA</td>
<td>$372.00</td>
<td>3.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00% CLOSE 311</td>
<td>$360.00</td>
<td></td>
<td>10.07</td>
<td></td>
</tr>
<tr>
<td>36.00% STALKLAGE</td>
<td>$45.00</td>
<td></td>
<td>15.00</td>
<td></td>
</tr>
</tbody>
</table>

As fed lbs. per cow 75.39 45.18  88.64

**Transition Dairy Table**

<table>
<thead>
<tr>
<th>Cow #’s Fed For</th>
<th>125</th>
<th>125</th>
<th>350</th>
<th>Total Fed</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow #’s Actual</td>
<td>125</td>
<td>125</td>
<td>350</td>
<td>Total Cows</td>
<td>600</td>
</tr>
<tr>
<td>Ration DM lbs</td>
<td>44.0</td>
<td>27.1</td>
<td>28.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual DM lbs</td>
<td>44.0</td>
<td>27.1</td>
<td>28.0</td>
<td>Aver/cow</td>
<td>31.1</td>
</tr>
<tr>
<td>Feed Cost/cow</td>
<td>$0.55</td>
<td>$4.17</td>
<td>$2.17</td>
<td>Aver/cow</td>
<td>$3.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Daily Tons</th>
<th>Daily $</th>
<th>Monthly Tons</th>
<th>Monthly $</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORN SIAGE</td>
<td>3.00</td>
<td>$197.79</td>
<td>89.9</td>
</tr>
<tr>
<td>WHEAT SIAGE</td>
<td>8.34</td>
<td>$466.87</td>
<td>250.1</td>
</tr>
<tr>
<td>ALF HAY</td>
<td>1.25</td>
<td>$356.78</td>
<td>37.6</td>
</tr>
<tr>
<td>WHEY</td>
<td>2.60</td>
<td>$98.80</td>
<td>78.0</td>
</tr>
<tr>
<td>ALMOND</td>
<td>0.36</td>
<td>$52.13</td>
<td>11.3</td>
</tr>
<tr>
<td>PRO 29</td>
<td>2.70</td>
<td>$109.30</td>
<td>81.0</td>
</tr>
<tr>
<td>FLAKED</td>
<td>0.31</td>
<td>$98.44</td>
<td>9.4</td>
</tr>
<tr>
<td>WCS</td>
<td>0.16</td>
<td>$80.94</td>
<td>4.7</td>
</tr>
<tr>
<td>DRY HAY</td>
<td>0.38</td>
<td>$44.63</td>
<td>11.3</td>
</tr>
<tr>
<td>HIGH MIX</td>
<td>0.47</td>
<td>$181.92</td>
<td>14.2</td>
</tr>
<tr>
<td>CANOLA</td>
<td>0.22</td>
<td>$79.98</td>
<td>6.5</td>
</tr>
<tr>
<td>CLOSE 311</td>
<td>0.63</td>
<td>$239.16</td>
<td>18.9</td>
</tr>
<tr>
<td>STALKLAGE</td>
<td>2.63</td>
<td>$118.13</td>
<td>78.8</td>
</tr>
<tr>
<td>BST</td>
<td>0.00</td>
<td>$0.00</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>23.05</td>
<td>$2,100.86</td>
<td>691.4</td>
</tr>
</tbody>
</table>

Days/Unit: 30

Price/Unit: $6.21
Newborn calves will be moved into hutches the day after birth. Heifer and bull calves will be placed in wooden hutches where they will be better isolated from disease. Once calves are in the hutches they will be fed twice daily, once in the morning and once in the afternoon. Heifers will be fed whole milk and milk powder that is flash pasteurized at 156°F and fortified with 13 percent solids using a refractometer. They will receive this diet in the amount of 4 quarts per day for the first two weeks of life. Fresh water and starter grain will be provided in buckets in addition to the milk feedings. On the first day in hutches, heifer calves will receive a Scourguard®4KC vaccine thirty minutes before receiving their first bottle of milk. This vaccine is an oral injection that protects the calf from the rotavirus and coronavirus that result in severe scour, depression and increased death loss among calves. Between days 3 and 5 heifer calves will receive TSV-2®, an intranasal multi-purpose vaccine. From day 14 through day 56 heifer calves will be fed 2 quarts twice per day of whole milk with 11 percent fortified solids. At day 48 heifer calves will receive their second vaccination of Bova-Shield 4®. This vaccine is a booster to the first TSV-2® vaccine calves receive. It protects calves from a number of viruses including respiratory and diarrhea. This vaccine is to be given a week before weaning starts to minimize stress on the calves. At day 56 weaning will begin and calves will be reduced to one 3 quart bottle feeding per day for one week in addition to an 18 percent protein starter grower mix. At day 62 heifer calves will be completely taken off milk. At day 72 calves will be moved out of hutches and put into group pens.

Group pens will consist of 16 calves per pen with 20 feet of feeding space. The first group pen will have non-locking stanchions to allow calves to adjust to the new environment. The calves will be fed a 16 percent protein diet as fed that will consist of
1% hay, 39% rolled corn, and 61% protein mineral calf pellet. They will be fed this diet until 120 days when they will be returned to the dairyman.

Bull calves will be fed the same diet as the heifer calves and will be weaned and moved into group pens at the same time as well. However, they will receive no vaccinations. Even with 4 quarts consumed per day of milk replacer it can be estimated that these bull calves will still grow at a rate of 1.5-1.75 pounds per day, which will bring them to a weight of 260-300 pounds by the time they reach feeder age at 120 days. With an average price paid of $1.40 per pound you can expect to receive between $365 and $420 for a 120 day old bull. With a cost of $100 on average to purchase the bull from the dairyman and a cost of $1.30 per day to raise the calf there will be a total of $256 invested in each calf by the time it is ready to be sold. Based on these numbers and current beef price it can be assumed that a profit of $110 and $165 will be made per bull.
Materials

Listed below are the materials the proprietor will need to start the operation.

<table>
<thead>
<tr>
<th>Medicine/Vaccine</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSV®-2</td>
<td>$4.80/10 ds</td>
</tr>
<tr>
<td>Bova-Shield®4</td>
<td>$8.50/10 ds</td>
</tr>
<tr>
<td>Ultra Choice 8</td>
<td>$48.50/50 ds</td>
</tr>
<tr>
<td>J5 Shield™</td>
<td>$65/50 ds</td>
</tr>
<tr>
<td>Excenel®</td>
<td>$153.18 x250 ml</td>
</tr>
<tr>
<td>Excede®</td>
<td>$147 x 100 ml</td>
</tr>
<tr>
<td>Salmonella</td>
<td>$102/50 ds</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>$9/100 ml</td>
</tr>
<tr>
<td>Tetra 324</td>
<td>$70/5 L</td>
</tr>
<tr>
<td>Scourguard®4KC</td>
<td>$165/ 50 ds</td>
</tr>
<tr>
<td>Spectramast®LC</td>
<td>$470/ case</td>
</tr>
<tr>
<td>Quartermaster®</td>
<td>$277/ case</td>
</tr>
<tr>
<td>Orbeseal®</td>
<td>$255.57/144 ds</td>
</tr>
<tr>
<td>Vitamin B</td>
<td>$12/ 500 ml</td>
</tr>
<tr>
<td>Laxade Bolus 75S</td>
<td>$11.21</td>
</tr>
<tr>
<td>Rumen Bolus</td>
<td>$60/40 ds</td>
</tr>
<tr>
<td>Polyflex®</td>
<td>$38/bottle</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>$4.50/100 ml</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>$12.50/gallon</td>
</tr>
<tr>
<td>Aspirin</td>
<td>$17.70/50 ds</td>
</tr>
<tr>
<td>Calcium Gel</td>
<td>$7.95/tube</td>
</tr>
<tr>
<td>Calcium Propionate</td>
<td>$2.75/bottle</td>
</tr>
</tbody>
</table>
These materials include everything that will be needed to operate the transition cow facility and calf ranch. Many of these materials including medicines and health supplies are included in the cost per cow and calf per day. Other materials are initial investments such as hutches, bottles, buckets, pasteurizer, dairy comp, truck and trailer etc. that will be paid off over time from the income received after cost of managing.
transition cows and raising calves. The initial investments listed above will cost a total of $133,411.45. Another $5,000 will be needed to stock the needed medicine and health supply inventory for start up, but this cost is factored into the rate charged per cow and calf. In addition, $63,025.88 will be needed to supply one month of feed. This amounts to a total start up cost of $203,437.33. The feed, medicine, and health supply portion of this cost is factored into the cost charged per cow and calf per day and will be paid for and re-stocked on a monthly basis. The $133,411.45 needed for the permanent investments will be paid off over a 7 year amortized loan at 7% interest. There are needed materials not included in the table above that will be borrowed and/or rented from Fernjo Farms. These include a John Deere 980 series tractor with a Dowdy’s calf feeding trailer, a John Deere 4955 series tractor with a drag scraper, a John Deere 534 C loader, a Massey Ferguson tractor with feed push-in blade, and a mobile hoof trimming chute. In addition, due to space limitations on this newly modified facility the Fernjo Farms commodity area will house the feed commodities for this facility. The Fernjo Farms feeder will also feed the transition cows and young stock using Fernjo Farms’ rotary mix feed truck since the facility is located directly across the street from Fernjo Farms. Fernjo Farms will be paid accordingly for this service. Another option that has been considered is renting or purchasing Fernjo Farms alternate rotary mix trailer and tractor and having another feeder added to the labor staff. Furthermore some renovations will need to be made to the facility. The current heifer pens will be used to house the weaned calves. These pen sizes will need to be reduced by adding extra fencing. Also the stanchions will need to be replaced and downsized and shades will need to be installed. The fresh pen already has functional misters but for added comfort and stress relief fans will be added. Fans will
also be added to the newly designated maternity pen. Also in the new maternity pen a
clocking calving shoot will be installed. Fernjo Farms will make these renovations to the
facility and will factor the cost into the monthly rent paid by the transition cow
management operation.
Results and Discussion

*Cost/Benefit Analysis for Contracting Dairymen*

Although the concept behind this operation may seem legitimate and appealing to dairymen whom might be potential customers, the decision to contract with this transition cow management facility and calf ranch will be based on financial incentives at large. There are many dairies of different sizes and financial situations within Tulare County. Because of this large variability it cannot be assumed that contracting with this custom operation would be economically feasible for every dairy. Even dairies that do find this service to be advantageous will have different reasons dependent on their unique situations. Some dairies may not have the resources to dedicate 24 hour management and care to their maternity barns and transition programs. Other dairies may be looking to reduce their costs and overhead. In addition there may be dairies that are not satisfied with their fresh cow performances or their calf raising program. There may also be dairies that are in violation of their air or water board permit for excessive animal units. From these examples it can be assumed that there will be significant interest in this service as long as it is set at the right cost.

Generally speaking, larger dairies in excess of 3,000 milking cows that have the resources and ability to allocate the proper time, labor and management into managing their own transition cows and raising their own calves will not find this service to be of much value to them. Also, because of the size limitations on this transition facility it is more geared for smaller dairies. Having said that, a 1200 cow dairy was used as an example to determine if this service is financially feasible. Based on the cost of feeding a
premium ration, labor, medicines, vaccines, bedding, utilities, additional overhead and
the desired margin of profit, a rate of $4.50 has been established as the price charged per
cow per day for this transition facility service. The cows will be fed a far-off ration for an
average of 45 days at a cost of $2.17 per cow per day. They will be fed a close-up ration
for 21 days at a cost of $4.17 per cow per day. The cows will also be fed a fresh-cow
ration for 14 days at a cost of $6.55 per cow per day (Daniels). This comes out to a cost
of $97.65 per cow for the far-off ration, $87.57 for the close-up ration and $91.70 for the
fresh cow ration. The result is a total of $276.92. If you divide this cost by 80 days the
average cost per cow per day is $3.46. Although the ingredients of transition rations and
costs may vary, it can be assumed that most dairies’ feed costs are within this range.

Assuming that a 1200 cow dairy can eliminate 3 employees including a night
maternity position, day maternity position and an assistant herdsman, a total of $7000-
$7500 per month can be saved on labor. Furthermore, based on the fact that most
vaccinations are given during the transition period and most metabolic disorders are
diagnosed and treated at freshening, an estimated $4000-5000 in medicine and health
supplies can be saved per month. In addition the cost of hoof trimming, which amounts to
around $15 per cow or $1000 per month for a dairy this size would be saved (Fernandes).
This results in savings of $12,750 per month not including the decrease in feed cost the
dairy would see by not having to feed close-up or dry cows for 66 days. If the average
cost of $3.46 per head to feed transition cows is taken from above and applied to this
dairy, a savings of $16,462.68 ((156 transition cows x $3.46) x 30.5) can be made on
feed. This amounts to a total savings of $29,212.68.
However, the dairy will be spending $21,411 per month ((156 dry cows x $4.50) x 30.5 days) by contracting with this transition facility. The cost for the amount of milk the dairy would be losing from not milking its fresh cows for 15 days needs to be noted as well. Assuming the dairy will have an average of 156 cows on the transition facility at all times for approximately 80 days per cow there will be around 31 cows fresh at a time. With milk production ranging as low as 4 gallons per day on day 1 and up to 7 gallons per day on day 15, each of those 31 cows will average 5.5 gallons per day for those 15 days after freshening. This amounts to 170.5 gallons or 1,466.3 pounds per day and 21,994.5 pounds after 15 days. With the current milk price set at $17 per cwt. this quantity of milk amounts to $3,739.06 of milk that the dairy would be losing out on every 15 days or $7,478.13 the dairy would be losing per month ($3,739.06 x 2). With this lost income added to the monthly cost of sending cows to the transition facility ($21,411) it amounts to $28,889.13. When subtracting this total from the $29,212.68 the dairy would be saving the actual savings amounts to $323.55 per month. In addition to these savings the dairy will have the opportunity to house around 13% or 156 more milk cows. If applying the county herd average of 72 pounds per cow for Holsteins this would amount to an extra 11,232 pounds of milk per day or an increase in gross revenue by $1909.44 per day or $58,237.92 per month (using current milk price at $17). Furthermore, the services of the custom transition facility would add value to this dairy by providing the ultimate cow care during the most critical period of the cow’s life. The results would be a healthier herd with higher fresh cow summaries and subsequently higher peak production. There will also be an increase in 1st service conception and a decrease in the
somatic cell count. All of these factors would contribute significantly in lowering the dairy’s overall involuntary cull rate.

The cost and benefits of the calf side of the operation can be calculated separately since the inputs and outputs are different. Like feeding and managing transition cows, the costs associated with raising calves vary on many dairies. Assuming that most dairies feed heifer calves a standard 4 quarts of milk per day, administer vaccines, wean at around 8 weeks, and move to group pens around week 9-10, the average cost to raise a calf per day is between $1.60 and $1.80 for 120 days. This amounts to a price between $192 and $216 invested in each calf after 120 days. Most custom calf raising sites are charging between $2.25 and $2.30 per calf per day. With this added cost there are expected outcomes. By paying more to have calves raised offsite dairymen expect to see higher growth rates, minimal death loss, and healthier calves that are on their way to growing into productive milk cows. To be competitive with other calf ranches a rate of $2.30 per calf per day has been established for this custom calf raising operation. Two factors that dairymen would find appealing about raising their calves here versus another calf ranch or at their own dairy are: 1.) having transition cows and calves on the same facility for convenience and consistency and 2.) assurance that the newborn calves are getting immediate attention and adequate amounts of colostrum from the start. In addition dairymen can expect to see less than 1% death loss on their heifer calves, higher growth rates at 2 pounds per day, and a higher price paid for bull calves. Heifer calves will receive optimum care and attention throughout the 120 days they are on site. Colostrum will be tested daily to ensure that the IgG levels are sufficient and blood serum tests will be conducted to ensure calves are ingesting adequate amounts.
Financial Analysis for Custom Dry Cow Transition Facility and Calf Ranch

Figuring out the exact cost to run this operation isn’t easy considering how volatile milk and commodity prices are. However, by using current prices for milk, commodities, labor, medicines, health supplies, fuel, utilities, insurance, workmen’s comp, rent and other materials, a good estimate was made. According to the premium transition cow ration formulated by nutritionist Tommy Daniels, the total cost per day for feed would be $2,169.50. Each calf will cost $1.30 per day to raise from day 1 to day 120. This cost does not include labor. Since there will be 8 employees working on the calf ranch and transition cow facility collectively, labor will be factored in separately. The $1.30 was calculated based on the fact that it will cost $.45 per calf per day for milk and $.85 per calf per day for grain. If labor and overhead were included in the cost it would amount to an additional $.30 per calf per day. With $1.30 multiplied by the estimated 1,200 calves that will be on the facility at a time there will be a daily expense of $1,560. Labor will amount to a cost of $566.55 per day assuming there are 8 employees working ten hour days, six days per week, at a rate of $9 per hour. This amounts to a labor cost of $.94 per day on a per cow basis ($566.55/600 cows). The cost per cow per year for teat dip, vaccines, mastitis, antibiotics, and health supplies was taken for two dairies in Tulare, CA and used to determine the cost per day for these materials on the transition cow facility. A cost of $175 per day or $.29 per cow per day was calculated for the health materials used on the transition facility. With the frequent bedding of the maternity barn and calf hutches and seasonal bedding of the corrals, a cost of $65.57 per day or $.03 per animal on site ($65.57/1800 cows and calves) was assessed for bedding materials, which include rice hulls and almond shells. This calculation was
based off of the current bedding usage and cost on the Fernjo Farms facility that will be converted into the transition cow and calf ranch facility. Based off of the current utilities usage and cost for this facility it can be assumed that the $65.57 per day or $.03 per animal per day will remain the same. A rent amount has been established by the proprietor of Fernjo Farms and set at $6,000 per month. This amounts to $196.72 per day or $.10 per animal per day. The cost for insurance has also been based off that of Fernjo Farms and would be $1,500 per month, $49.18 per day, or $.02 per animal per day. Based off of the number of employees that will work on the transition facility and calf ranch, workmen’s comp will cost $1,250 per month, $41.09 per day, or around $.02 per animal per day. The last expense is the payment on the $134,000 loan needed to start the operation. Since it would be a seven year amortized loan with a 7% interest rate the payment would be $1,706.89 per month, $55.96 per day, or $.03 per animal per day. When these expenses are totaled the daily cost of running this operation would be $4,847.63.

To calculate the income from operations an estimated 600 heifers that would be on the facility at one time was multiplied by the rate charged per calf per day of $2.30. The sum of this calculation is $1,380 per day. There will also be 600 transition cows on this facility at a time being charged a rate of $4.50 per cow per day. This calculation amounts to an income of $2,700 per day on the transition cows. There will be an estimated 120 fresh cows on the facility at a time. Assuming that 20 will be in the hospital since cows are in the hospital for the first two days after freshening, then there will be 105 cows milking in the fresh pen. With these fresh cows averaging 7 gallons of milk per day and current milk price set at $17 per cwt. it was calculated that the average
income from milk would be $1,074.57 per day. The final source of income will come from selling the bull calves for beef after 120 days old. The current price paid to dairymen for bull calves after they are born is around $100. The price per day to raise bull calves will be $1.30, which totals to $156 after 120 days. This amounts to a total of $256 invested in each bull calf by the time it reaches feeder age. The average weight of a Holstein calf is 85 pounds and the expected growth rate of the calf raised on this facility is between 1.6 and 1.75 pounds per day. This amounts to an average weight of 285.5 pounds after 120 days. With the current feeder price of $1.40 per pound it can be estimated the each bull will be sold for around $400. When the $256 invested in each calf is subtracted from $400 the net profit made from each bull calf is around $144. Since there will be an estimated 5 bull calves born per day, assuming that no sexed semen is used, there will be 5 bulls ready to be sold per day. Bulls will most likely be sold on a weekly basis in a load of 35, but to break down the profit per day it will amount to $720 (5 bull per day x $144 per bull).

When all of these incomes are added together it amounts to a total gross income of $5,874.57 per day. When expenses totaling $4,903.59 are subtracted the net income is $970.98 per day. This amounts to $29,614.78 per month and $355,377.36 per year.
Conclusion

This business plan has shown that starting a transition cow management facility and calf ranch can be a profitable endeavor for both the proprietor and the dairymen who pay for the service. Dairymen have the opportunity to improve their herd health, maximize milk production and increase their conception rates on their cows without spending more money. Their calves will receive immediate attention after birth and will be raised on the same facility up until 120 days. Both the cows and calves will receive the ultimate care and attention so that the expected outcomes are achieved. In addition, contracting dairymen would have the opportunity to decrease their labor cost, medicine and health supply cost, and feed cost. With the extra space allotted since the transition cows will be off site, a dairyman can milk 13% more cows while spreading fixed costs and ultimately increasing profit. The proprietor of this transition cow management facility and calf ranch will be price protected since the contracting dairymen will have to pay the same rate no matter what the milk and feed prices are for a given month. Being that feed prices are already at a historic high, a significant spike in the cost to feed these transition cows is not expected. Although milk price is very volatile, even a price as low as $10 per cwt. will generate a small profit. And in any case the proprietor has the ability to raise the cost of the service if fixed costs rise to a point where the operation cannot break even.
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