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## Incentives for Dairy Calf Raising



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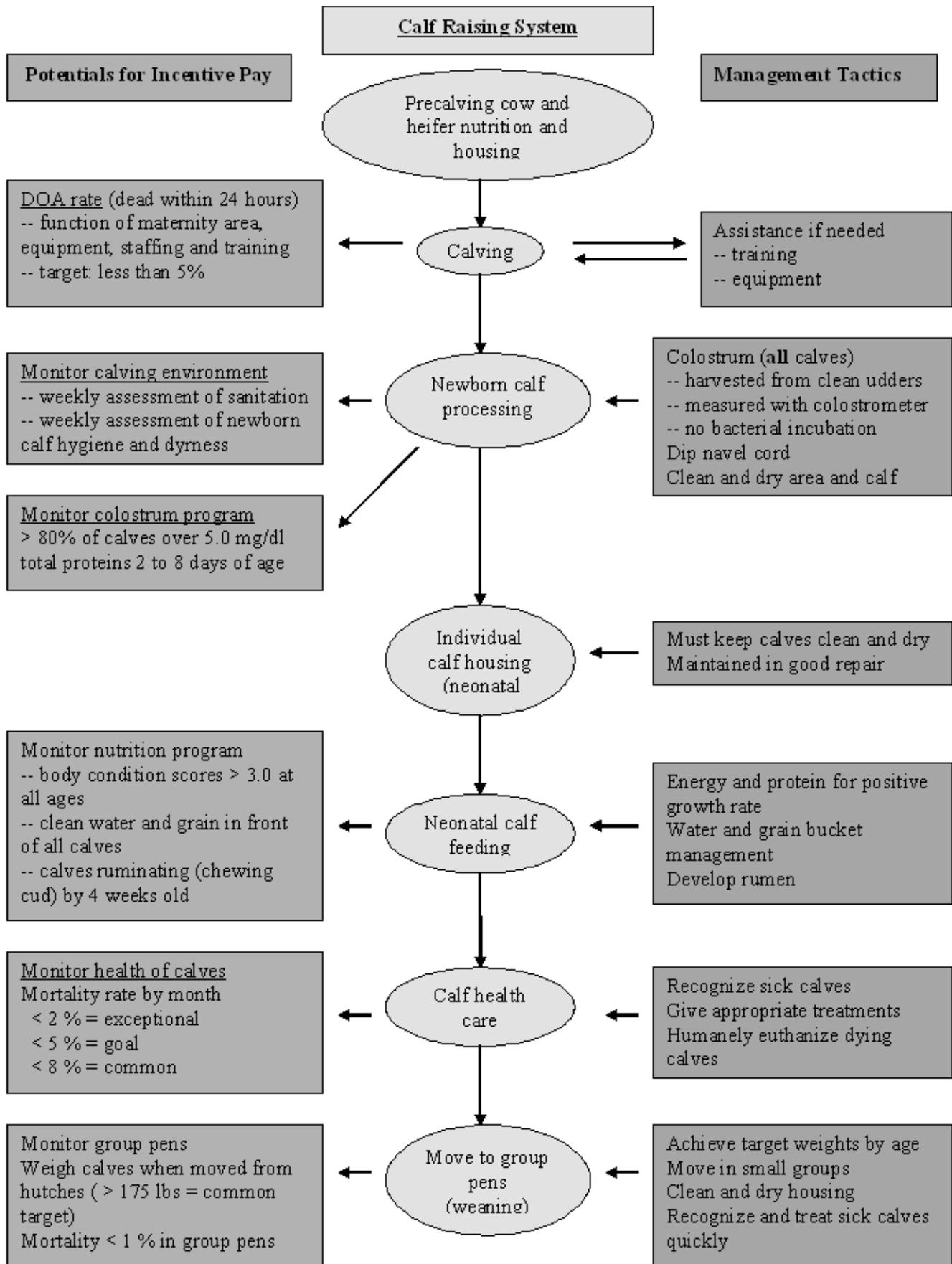
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Calf raising on dairies is very important to the profitability of a dairy. Managed properly, the calf program can supply a surplus of healthy replacement cattle to the dairy. If managed poorly, the calf program can consume money and resources, strain relationships and cause the dairy to purchase replacements. Dairy calf raising programs have many variations and can include several different management areas and systems on the farm. Successful calf raising begins with the

health, condition and sanitation of the late-gestation pregnant cows and heifers and ends when the heifer enters the milking herd. This discussion will focus on the system from birth to weaning, because this is the most labor intense period of calf raising and takes the most skill and management.

Dairies can raise their replacement heifers on site, have them custom raised at calf ranches for any part of the growing cycle, or sell them after birth.





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## CALF RAISING SYSTEMS ON DAIRIES OR CALF RANCHES

Calf raising systems can be outlined as the following parts:

- 1) Calves must be born in a clean and dry area.
  - Sanitation determines the pathogen load, or exposure to bacteria and other disease agents. Calves born into dirty conditions will be exposed to pathogens.
  - Calves born into wet conditions will lose body temperature and will need to expend energy to stay warm. Holstein calves are born with about 48 hours of energy reserves.
- 2) Dystocias must be attended by trained people in appropriate facilities.
  - Well-designed maternity areas allow workers to attend a cow in labor when she needs help. This will result in more live calves, better cow reproductive health and better calf health.
- 3) Calves must be fed adequate amounts of clean colostrum within a few hours of birth.
  - Poorly designed facilities require extra labor or result in ignoring cows that need assistance. This will increase the still-born rate and the number of calves born distressed.
  - Attending dystocias is a skilled task that truly requires training so that trauma to the cow is minimized and the chance for a live calf is maximized. The herd veterinarian should be used to help train the workers involved with delivering calves.
  - Appropriate and sufficient quantities of equipment, lubricants and disinfectants must be available to the workers at the maternity area.

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*Healthy calves start from birth: a clean and dry calf from birth is essential. The goal for the maternity area is to provide clean bedding and appropriate care for both the dam and the calf.*



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*Newborn calves have an absolute requirement for colostrum. Colostrum provides more energy and protein than regular milk or milk replacer and is the only source of antibodies in the newborn calf.*

- Calves have an absolute requirement for colostrum. Cattle are a species that does not transfer antibodies from the dam to the fetus during pregnancy. Therefore, the newborn calf is dependent on colostrum for passive immunity as well as initiation of maturation of the immune system.
  - Colostrum has twice the solids and considerably more energy and protein than regular milk or milk replacer.
  - Calves need colostrum for energy, protein, antibodies and to initiate the digestive enzymes and parts of the immune system.
- 4) Calves must be housed in clean and dry facilities.
    - Sanitation is one of the key determinants of the pathogen load in the calf's environment. Filth and manure expose calves to pathogens, clean housing protects calves.
    - Manure, mud and water decrease the insulating ability of hair and reduce the calf's ability to regulate body temperature. A wet calf will use up to 20% of it's' energy to stay warm in cold weather.
- Fly control is very important because flies transfer pathogens around a calf facility. Keeping the area in and around calf housing clean, dry and free of manure and water is very important.
  - Calves must be able to turn around when kept in individual hutches.
  - Calves must be provided dry bedding, shade from direct sunlight and shelter from rain or snow.
- 5) Calves must be fed adequate amounts of energy and protein for growth and health.
    - Whole milk provides more calories than most milk replacers.
    - Calves in positive growth are healthier and require less medical treatment than calves that lose body condition (fat stores) during early growth.
    - Body condition scores of calves from 7 to 28 days of age should not get below 3 (1 to 5 scale). Thin calves are the result of inadequate energy.
  - 6) Rumen development must be managed properly.
    - Calves are born with small, undeveloped rumens.
    - Rumen development occurs as a response to volatile fatty acids (VFAs) released during digestion of carbohydrates.
    - Grain intake determines VFA production. Therefore, it is imperative that calves are presented fresh, palatable grain daily so they will eat grain and make VFAs.
    - A calf can develop a rumen, become a functional ruminant and get energy from grain by about 3 weeks of life if managed properly.
    - Clean water must be provided to calves daily. Calves need water to stay hydrated and grain intake is dependent on water intake.
  - 7) Calves must be observed daily by trained personnel for attitude, body condition score, hygiene and health.
    - Workers must be trained to understand how to observe calves for the above parameters.
    - Workers must be trained to implement treatment protocols when they recognize sick calves.
    - Calf health is determined by positive growth, which can be measured by

- body condition score observations.
  - Workers must have the ability or authority to correct problems in housing maintenance, feeding, handling or treatment or be able to direct their observations to supervisors who will implement necessary actions.
  - Calves that require euthanasia must be identified and humanely euthanized.
- 8) Calves should be moved from individual housing to group pens as soon as possible.
- Individual housing and liquid feeding is more expensive than group housing and solid feeding.
  - Calves can only be removed from liquid feed after they have developed rumens and are eating and digesting over 1 pound of grain daily for at least 3 days in a row.

- Target body weights should be established for each facility that allow healthy transition from individual pens to group pens.
- Calves can generally be smaller when moved into small groups of 5 to 10 calves. Calves should be larger when moved into groups of over 30 calves.
- Most dairies target 175 pounds for calves before moving from individual pens to group pens.

### INCENTIVE PAY PROGRAMS IN CALF RAISING PROGRAMS

Causal incentive pay programs, where the employee never knows when a reward will be given, are used on some farms. Examples of these

*The goal in the hutch system is to have calves that are alert and curious. All calves must have fresh and clean water and grain available everyday so that they develop rumens quickly and maintain normal hydration.*



American Jersey Cattle Association, Reynoldsburg, Ohio

*An easy way to monitor the nutrition program in young calves is to observe body condition as they grow.*

*Body condition can be scored from 1 (emaciated or very thin) to 5 (fat) based on the amount of covering over the pelvis and ribs. Calves should not be less than 3 body condition score as they grow. The calf pictured is about a 3 and represents a healthy calf.*

programs are when employees are given gifts, such as restaurant vouchers or cash gifts, when the owner or manager feels that work has been productive or the farm income has been good. These unstructured attempts to direct employee behavior by spontaneous rewards usually fail in the long term because the underlying reasons for the rewards, such as hard work or increased income, have not been clearly defined and are achieved only by happenstance and not management.

Successful calf raising requires clearly defined goals, objectives and tactics. Workers should be trained to their jobs and tasks and understand what the outcome goals are for their specific areas of work. Only then will structured incentive pay programs work. Incentive pay can be arranged for any work done by employees that produces more outcome or better results than they are expected to provide for their base salary.

Incentive pay can be set for any of the areas described in the calf raising system outline above. Any effective and lasting incentive pay program will require considerable interest and effort

by management. Management will have to establish targets, collect the data or information related to each target, analyze the information and report to each employee whether or not the target was met. If the employee did not meet the target(s) it is necessary to tell the employee why they will not get the incentive pay and work with them to correct the situation. Many times targets are not met for reasons that are out of the employee's control but require management or the supervisor's involvement. For example, a worker may do a very good job of feeding colostrum to the calves but the milking crew may be providing the wrong milk to the calf worker, or they may not be cooling the evening colostrum, thus allowing bacteria to incubate. If management does not correct the parts of the system that are outside the worker's control the worker may become disgruntled and the incentive program may become a disincentive program.

Actual dollar amounts to be given for each targeted incentive program are difficult to determine and will depend on the particular farm. Losses from calf deaths, less than desired weight gains and more than desired medicine costs can be calculated and the expected savings shared with employees when the targets are met.

Potential areas for incentive pay in the calf raising system could then be the following:

Rates are usually defined as number of cases/ number of eligible animals per month. The analysis can be done weekly or quarterly, depending on the size and needs of the farm. [*Editor's note: Even if the employees are not paid right away, the more frequent the feedback, the better. This is especially true when getting started on an incentive pay program*]

#### **DOA rate (dead on arrival)**

This is usually defined as calves that are born dead or die within the first 24 hours after birth. The rate varies considerably by dairy due to the facilities, worker training, staffing levels, pre-partum cow nutrition, parity



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of the dam, housing and the owner's attitude and desires.

*Calculation:* number of calves DOA/number of calves born per time period.

*Suggested targets:* < 5% = excellent; < 10% = achievable.

*Possible corrective actions when target not met:* increase staffing to accommodate increases calving load, retrain employees, investigate pre-partum cow and heifer conditioning.

### Colostrum feeding

Because calves require colostrum it is imperative that they receive it promptly. Colostrum feeding is commonly monitored by testing the blood of the calf for evidence of absorbed maternal antibodies. This can be done either by radial immunodiffusion, salt precipitation (sodium sulfite turbidity test) or by total serum protein determination (TP). Total proteins are determined with a hand-held refractometer and are easiest and most practical for on-farm use. Calves are born with about 4.5 mg/dl of TP. Levels over 5.0 mg/dl between 2 and 8 days of age indicate that the calf received and absorbed maternal antibody proteins. Levels can be as high as 6.5 to an occasional 7.0 mg/dl. Dehydration and age interfere with interpreting TP values.

*Monitor:* routinely (weekly or monthly) test a sample of calves for total serum protein. Usually 10 calves are bled for this test.

*Suggested targets:* >80 % of calves should be above 5.0 mg/dl TP. > 50 of calves should be > 5.5 mg/dl TP.

*Possible corrective actions when target not met:* verify quality of colostrum with colostrometer, verify good quality colostrum is arriving at maternity area on time,

### Nutrition and growth rates in young calves

Positive growth of calves is the single most important thing associated with health in calves. If calves are growing and gaining weight they can

resist disease. If they are losing body condition or weight they will get sick. Calves are expected to grow at least 1.7 to 2.2 pounds per day from birth through the end of the liquid feeding period (usually 60 to 80 days of age). Body condition is an excellent tool to monitor the feeding program.

*Monitor:* body condition scores in calves in the individual hutches. Once per week determine the proportion of calves too thin (< 3 BCS ) or normal (3 or > BCS).

*Suggested target:* > 80 % of calves less than 30 days old should be 3 or greater BCS ( 1-5 scale).

*Possible corrective actions when target not met:* Review the amount of energy available in the milk replacer and that the milk replacer is mixed properly and the correct amount fed. Calves may require increases in calories depending on ambient temperature and pathogen load. The milk replacer may need adjustment to control the body condition scores within desired limits.

### Rumen development

Calf rumen development is dependent on volatile fatty acid production in the rumen from bacterial breakdown of carbohydrates. This is completely manageable and should happen as early as possible so that the calf will receive energy from grain, a cheaper feed than milk or milk replacer. Calves can be developed into functional ruminants by 25 days of age.

*Monitor:* calculate the proportion of calves chewing their cuds in the 25 to 35 day-old group.

*Suggested target:* at least 20 % of the calves in this group should be chewing cuds when observed resting.

*Possible corrective actions when target not met:* review bucket management. Make sure clean water is available from day 1 of age and grain is clean, fresh and palatable.

### Health of calves

Measuring the mortality (MR) or morbidity rate are outcomes that are too late in the management system to be very useful for economics or welfare.

The mortality rate is commonly calculated and is useful as a clear measurement of success or failure of the calf raising system. The morbidity rate (number of sick calves in a time period) is difficult to determine accurately because the recognition and diagnosis of calf diseases can be subjective by employees and most calf ranches or dairies do not adequately record morbidity information.

*Calculate:* divide the number of calves that died in a time period by the number on the ranch during that time period. An easy way to estimate the denominator is to average the begging inventory and the ending inventory (add the number of calves in the system at the beginning of a month and the number at the end of the month and divide by 2). It is most useful to determine mortality rates for specific age, or management, groups such as MR

for calves less than 30 days of age and MR for calves in the group pens.

*Suggested targets:* overall MR for the replacement system: < 2 % per year = excellent, < 5 % per year = achievable, < 10 % per year = average dairy or calf ranch.

*Possible corrective actions when target not met:* Review all areas of the calf raising system, but focus on sanitation and nutrition.

## CHAPTER 4 REFERENCES

1. This chapter builds on Carol Collar's chapter in the 3<sup>rd</sup> edition of *Dairy Incentive Pay*.

