

# Dairy Calf Survival Starts with Management

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Feeding and management practices of dairy calves directly impact not only their survival, but as importantly, their future milk production. Recent studies which have followed calves through their first lactation have shown a positive relationship between early life nutrient intake and first lactation milk production. In addition, new research has shown additional benefits of proper colostrum intake on calf health. Thus, early and adequate intake of colostrum and proper nutrition after colostrum feeding (which includes calf starter, water, and adequate milk (milk replacer) are critical. To accomplish these goals, please take a few minutes to review your feeding and management practices for your dairy calves in light of the new research that illustrates their importance on calf health and future productivity.

## **Management concept #1: Underfeeding or overfeeding the dam does not change the calf's birth weight.**

**Reason:** By decreasing the nutrition of the dam, the size of the calf is not changed. Basically, the size of the calf is genetically predetermined. Studies in beef cattle have shown that underfeeding energy or protein to the dam can decrease the ability of the calf to regulate its body temperature after birth. Thus, underfeeding the dam during the last two months of gestation can increase mortality of the calf within the first two weeks of life. Also, dams with body condition scores at 4 or greater have a higher incidence of dystocia or trouble giving birth. These calves also have higher mortality rates than those born without calving difficulty. Mineral nutrition of the dam also affects the quality of colostrum available to the calf after calving. Prevention of heat stress in dry cows also improves the quality of colostrum and the absorption of antibodies in colostrum by their calves. Bottom line—research shows it is critical to meet nutritional requirements and prevent heat stress in dry cows for healthy, productive calves.

## **Management concept #2: Hand feed calves 4 quarts of colostrum within 4 hours of birth.**

**Reason:** Calves are born without antibodies against diseases and need to absorb the immunoglobulins found in colostrum to protect against disease. Colostral immunoglobulins (IgG) are absorbed most efficiently within the first 4 hours of life. At 12 hours of age, absorption of antibodies is approximately one-third of the rate at birth and is essentially zero by 24 hours of age. Several studies have shown that dairy calves that suckle their dam do not receive adequate amounts of colostrum and thus do not receive adequate protection against disease. Calves should receive 4 quarts of colostrum at the

initial feeding after their birth To feed this amount to calves, patience is important since some Holstein calves may “feel full” after 3 quarts of colostrum. These calves may need to be fed using an esophageal feeder. More recent studies have shown that colostrum supplies additional immune and nutritive factors besides immunoglobulins. Feeding adequate amounts of colostrum also can improve rumen papillae growth and health and absorption of nutrients from the small intestine. These factors result in improvements of growth in calves. Another study has shown that calves fed 4 quarts of colostrum at birth give 11% more milk their first lactation compared to the calves that were fed 2 quarts of colostrum at birth.

### **Management concept #3: A calf’s first meal should be colostrum, not manure.**

**Reason:** Both the cow and her calf need to be managed to insure the calf’s first meal is clean colostrum not manure-laced Why? Contaminated colostrum can increase the incidence of diseases which cause scours and might decrease the ability of the calf to absorb immunoglobulins from colostrum. How can you decrease bacterial contamination? First and foremost, remove the calf from the cow immediately after the calf has been cleaned by her dam. You want to avoid the calf getting “a manure meal” from the calving environment, dirty teats or dirty legs, etc. of the dam. Secondly, milk the cow in clean equipment and wash the cow as if “you” were going to drink the colostrum. To quickly cool colostrum, place clean pop/soft drink bottles with frozen water in the milk bucket. Refrigerate or freeze colostrum immediately. If colostrum is fed fresh (refrigerated), feed within 2 days. Pasteurization of colostrum (60 degrees C for 60 minutes) may also help reduce the bacterial load.

### **Management concept #4: Calves need warm, draft-free housing.**

**Reason:** Calves in the first week of life spend 80% of the day lying down. The time spent lying down only decreases to 75% in week 2 of life. Thus, the housing environment where calves lay down is critical to their survival. Newborn calves have very little body fat and consequently their comfort zone is between 50°F and 78°F. By a month of age, a calf’s comfort zone widens and is between 32°F and 73°F. Thus, during cooler temperatures baby calves need additional milk for energy and need to be bedded with straw. Straw allows the calf to “nest” into the straw and stay warm. Studies have shown that nesting scores of 3 where the calf’s legs are covered by the straw decrease the incidence of respiratory disease. During the summer when temperatures are greater than 80°F, shade cloth over calf hutches can help modulate heat stress and improve the immunity of calves.

### **Management concept #5: By three days of age, calves should be fed a small amount of calf starter and free-choice water in addition to their appropriate amount of milk or milk replacer.**

**Reason for providing calf starter:** Calves only eat about 1/10th of a pound of starter the first couple weeks of life, but this small amount is important in rumen development. Studies have shown that more rumen development occurs when starters are textured versus pelleted or ground. Holstein calves should be weaned when they are eating 2 lbs of starter for 3 days in a row.

**Reason for providing free-choice, clean water:** Providing clean water year round is important for rumen development. Calves provided with water gain 33% more and have less scours. Water needs to be provided separately from milk. Reason for not feeding hay until the calf is at least 2 months of age: Feeding hay to calves before they are consuming 5 lbs of calf starter decreases rumen development. Digestion of starter in the calf's rumen helps develop the rumen papillae that absorb the VFA's that supply energy to the calf. Calves have only a limited ability to digest forages.

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