

Management Tips for Calves Fed With Automated Milk Feeders

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Abstract

Automated feeding of calves continues to increase in popularity. These systems allow calves access to liquid feed around the clock in a less labor-intensive manner than traditional feeding methods. Advantages of these programs include smaller, more frequent meals for calves; consistency in feeding; detection of sick animals in group housing; reduced labor needs; flexibility in labor needs; increased activity; social stimulation; enhanced growth; and public image. Disadvantages include potential communication of disease among group-housed calves and cross-sucking. On-farm results with automatic feeders are providing evidence that group feeding can work on farms of various sizes and can enhance calf growth.

Introduction

Individual housing and feeding of calves has been considered the gold standard for housing for many years. Limiting contact of calves with their dams and with other calves was particularly effective in control of calfhood diseases. Within 24 h of birth, calves were usually separated from their dam, housed individually, and fed twice a day at approximately 10% of body weight. A main goal of the pre-weaning period was to provide nutrients for maintenance and growth, while limiting milk feeding to facilitate transition of calves from milk to dry feed. This was done in part to limit costs of the milk-feeding program and also to reduce the substantial labor in feeding milk to calves.

In contrast, calves left with their dam will consume up to 10 meals per day and substantially more milk (Albright and Arave, 1997). Not surprisingly, calves consuming more frequent meals and a higher volume of milk gain weight faster (Flower and Weary, 2001). Research from multiple institutions in Europe and the United States demonstrated that calves consuming higher than standard amounts of milk or milk replacer had no detrimental effects on mammary development (Sejrsen et al., 2000; Brown et al., 2005; Meyer et al., 2006) and future milk production (Foldager and Krohn, 1994; Bar-Peled et al., 1997; Rincker et al., 2011). Together with use of automated milk feeders, this knowledge has helped to promote adoption of strategies to feed calves more liquid feed during the pre-weaning stage. Further, the resulting feasibility of group housing of calves has been gaining in popularity in other countries, in part for the more natural social interactions it provides and the potential for labor savings.

Types of Feeders

Automated feeders involve multiple types of commercially available computer-controlled feeders or farm-fabricated feeders. The liquid feed provided is either whole milk or milk replacer. When farm-fabricated feeders are used to provide free access to milk, acidification of milk or milk replacer allows for preservation of milk for 1 to 3 days. Formic acid can be used to preserve milk, depending on the room temperature, and requires regular

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stirring several times per day. Milk is often delivered to calves via inexpensive homemade containers with hoses and nipples attached. Automated feeders, of which at least several brands are marketed in the U.S., involve feeding whole milk or milk replacer.

Nutrition

Free access of calves to automated feeders requires feeding calves for ad libitum consumption of milk or milk replacer, similar to the behavior of calves allowed to suckle a cow. In the U.S., the majority of calves are housed individually and fed 2x/day (USDA, 2007), leaving a longer interval between meals and requiring larger meals than calves suckling their dams. Challenges of this system include hunger and variability in abomasal pH. Behavioral challenges include isolation of calves from their dam. In contrast, feeding of calves with free access to milk permits calves to consume at will, as frequently as 7 to 8 meals/day if access is not limited by automatic feeders. Calves allowed free access will consume up to 10 kg/day of milk (Jasper and Weary, 2002). Calves allowed a low level of milk tend to spend more time on non-nutritive suckling at the feeder because the calf is still hungry. As calves approach the time of weaning, reducing the number of milk portions allowed results in calves spending less time ingesting milk, compared with reducing the portion size per meal (Jensen, 2006). Gradual weaning of calves also reduces development of cross-sucking compared to abruptly weaned calves (Nielsen et al., 2008).

The First 1 to 2 Weeks

Successful transition of calves into group housing with automated feeders requires vigorous calves with a strong suckling reflex. To limit spread of disease, new calves should be housed and fed individually for 1 to 2 weeks before the transition to group housing. The timing of the transition will depend on a given farm's colostrum management program, the health of each calf, and the age range

of the group into which new calves are being introduced. Calves should be drinking milk well and appear healthy before moving the calf into group housing. After calves are moved into a group, a combination of direct observation of calves by the calf manager, and on farms with automatic milk feeders, the data on number of visits to the feeder is important to detect sick calves early and remove them to individual housing for treatment.

Housing

Automatic feeders require a shift to group housing of calves. Traditionally, individual housing of calves has been the "gold standard" for managing calves. Although in the past, calves were often group-housed in available existing facilities rather than in facilities specifically designed for that purpose. As a result, calves were housed in barns with lactating cows or in other facilities that had suboptimal ventilation. In addition, less was known about management practices to maximize passive immunity of calves. A surge in interest in calf management practices in the past 10 years has highlighted the importance of colostrum, sanitation, adequate nutrition, and ventilation. These factors are critical to raising healthy calves, regardless of the type of housing involved. Similar to older animals, calves will perform best in clean, dry, comfortable and well-ventilated housing with free access to palatable feed and water.

Role of the Calf Manager

Use of automated milk feeders reduces the time and labor associated with feeding calves and removes the variability associated with people preparing and delivering feed to calves. The systems also change the type of labor needed to manage a calf program. With the increased risk of disease associated with group housing, the calf manager must be able to identify sick calves through observation, take steps to limit exposure of other calves, and treat affected animals. Time spent on

mixing, feeding, and cleaning can instead be spent to monitor calf performance.

Removing the commitment to feed calves at certain times each day also provides more flexibility for the calf manager's schedule.

The calf manager should be adept at monitoring the automated feeding equipment on a regular schedule to ensure correct mixing and delivery of the desired quantity of milk to calves. The cleaning system for the feeder also must be checked to confirm it is working properly.

Maintenance

Proper maintenance and monitoring of automatic feeders are essential to normal function and calf health. Failures in delivery or mixing of milk replacer or in cleaning can result in underfed calves or exposure to disease-causing bacteria. The feeders should be cleaned and disinfected frequently, avoiding times of high feeding activity by calves. Lines and nipples should be replaced and systems involving delivery of milk replacer powder should be calibrated on a regular schedule.

Conclusion

Management and nutrition of calves is an important investment in the future productivity of a dairy herd. Automated feeders can be a useful tool in a successful calf-raising program, allowing calves to grow to their full potential while taking advantage of the benefits of group housing. Excellent calf management is required to benefit from their use.

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