

# Group Feeding Calves with Autofeeders

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Two challenges exist in feeding the preweaned dairy calf – providing sufficient nutrients for “biologically normal” rates of gain and managing labor. Research has shown that calves cannot meet their maintenance requirements when fed only two quarts of milk or milk replacer twice daily at temperatures below 50° F. However, feeding more milk with twice a day feeding is a challenge due to the large volume of milk involved. Uneven intervals between feeding may limit intake during the afternoon feeding when larger volumes are fed. Calf feeding and care is a labor intensive operation involving feeding and cleaning of buckets and bottles as well as other chores with health care. More frequent feeding is problematic as it increases labor requirements and involves a late night feeding.

Several manufacturers are producing equipment that has shown to be effective in feeding calves and providing valuable management information. Desirable features of autofeeders include:

- Identification of calves using standard RFID tags.
- Development of individual calf feeding plans
  - Gradual daily increase of milk or milk replacer allocation during early life.
  - Minimum and maximum meal sizes - According to their daily allocation established in the feeding plan, calves must “earn” enough credits as time passes to reach a minimum meal size. (Eg. If calves are allocated 8 liters of milk replacer per day they must wait a little over 2 hours to earn the right to consume 1 liter of milk since their last meal). Maximum meal sizes are established to avoid “slug” feeding of large volumes of milk at one visit to the feeding station. Milk or milk replacer is delivered in .5 L batches. If the calf has a remaining allocation for a given feeder visit, additional batches will be mixed until the calf consumes their maximum meal size.
  - Weaning can be tailored as desired to gradually reduce milk or milk replacer allocation over 3 to 14 days to encourage less stressful weaning.
- Monitors – Autofeeders automatically provide information to the manager describing feeding behavior of the calf which might indicate impending illness.
  - Daily intake relative to previous days
  - Drinking speed - Although calves may consume their daily allocation, declines in the rate of intake appear to be a useful indicator of impending disease.

- Breaks - The calf leaving the stall before the delivered volume of milk is consumed.
- Managers can specify multiple measures which will trigger an alarm notification for a calf that has not achieved desired feed behavior.
- Feeders can deliver whole milk or milk replacer at a specified temperature and solids level in the case of milk replacer. Milk replacer and milk can be blended to achieve desired nutrient levels. This is especially beneficial when there is an inadequate supply of unsaleable milk.
- Additives can be delivered in precise amounts to individual calves
- Equipment is sanitized automatically, much the same as milking equipment.

The benefits of automatic calf feeders allow greater daily volumes of milk or milk replacer to be delivered in smaller meals which should be less stressful to the calf. Significant amounts of information are reliably provided to the manager to assist in detection of calf disease. Since dairy animals are “herd” animals, group housing appears to be less stressful to calves from a social viewpoint. Movement of calves in to the post weaning pen is also less stressful.

However, it is important to note that there are challenges to the adoption of systems using autofeeders in group housing. Calves are usually housed and managed individually in hutches or individual pens for the first 3 to 10 days of life. Facilities must be carefully designed to assure adequate positive pressure ventilation and provision of dry, well bedded resting areas. Calf managers in these systems must have excellent observation skills of young calves and be somewhat mechanically inclined to service and maintain the autofeeders. They should be data oriented individuals as well.

The panel members represent a variety of situations and environments across the U.S. We have asked them to share information about their operations as well as how they adapted to the management challenges of calf autofeeder systems. We greatly appreciate their traveling to Reno to share their experiences with you.

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Laura is one of 4 family owner/managers at Hillside Farm located in Dublin, VA. She received a B.S. in Dairy Science from Virginia Tech in 2009 and has spent the past five years working with her family to promote efficiency and animal health on their 200 cow dairy. During 2014 the farm transitioned into new facilities including an automated calf feeder barn with a Lely Calm calf feeder with two milk feeding stalls. The barn has two nursing pens which are equipped to house up to 60

nursing calves, divided into age groups of newborn to 30 days and 31 days to weaning. The nursing half is 76' x 45' and has a full concrete floor. All pens provide resting areas bedded with straw and have free choice access to 22% protein calf starter.

Key features of the calf rearing system are:

- **Building design**

- New construction (156' x 45' with 14'eave height) equipped with top drop curtain system, positive pressure ventilation tubes, and full concrete floors for ease of cleaning.

- Weaned calves are housed within the same barn which allows for easier transition.

- **Rigid risk management protocols for disease prevention**

- All calves are treated with equal attention at birth including a full 1 gallon portion of high quality colostrum within the first 6 hours, a preventative dose of a serum antibody within 12 hours and a dose of Inforce 3 upon introduction to the group pen.

- Boot sanitization is required upon entering and exiting the barn.

- **Attention to detail in the environment**

- The floor around the feeder area is hosed clean a minimum of once daily, calves have deep bed straw at all times and calf jackets are utilized in temperatures under 50 degrees F.

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Jeanne Wormuth is the Manager of CY Heifer Farm, LLC. Located in Elba, New York the facility custom raises 4,000 dairy heifers for customers ranging in size from 100 cows to several thousand. Ten very dedicated and long-term employees raise heifers from shortly after birth to about 2 months pre-calving. Calf raising has evolved from individual pens and hutches to converting in 2007 to group housing and automatic feeders. Jeanne also oversees Provitello Farms, LLC a 1,200 head milk fed veal facility that is co-located with the heifer farm that also group houses calves and machine feeds milk.

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CDF DAIRY TEXAS with locations in Hartley and Exum, TX. C.A. and his wife Kirsten Clauss Russell are partners with Kirsten's two sisters, Karen Tate and Kimberly Jorritsma, in CDF Dairy. The dairy began operations in November of 2011 and is currently milking 3500 in Hartley, TX. Construction is in progress on the Exum milking facility that will expand the herd to 6000 milking. The Texas operations have all grown out of the partner's California dairies. (Yosemite Jersey Dairy, Clauss Dairy and Sunwest Jersey Dairy).

We made the decision to move to automatic feeders with the desire to:

- Provide calves with a controlled environment to minimize harsh weather conditions of the High Plains
  - Develop a more consistent milk delivery system
  - Improve labor efficiency
  - Obtain information to assist us with management decisions

The design for the EXUM calf operation came from touring installations in Iowa, Minnesota and South Dakota. The facilities we visited ranged from converted chicken and hog barns to ones designed specifically for dairy calves. We noticed that regardless of the design, the calves in each facility were thriving. Working with our contractor we designed the Exum facility incorporating the things we liked best about the operations we toured.

The barn currently has 12 Automatic feeders each with two feed stations. Each feed station services 26 calves. The pens are designed with 21 square feet per calf. Pens are bedded once a week with wood chips and chopped straw. The pens are sloped to drain to an underground fresh water flume that is flushed each hour. Radiant heated floors are in the nesting area in each pen. The barn itself runs east and west with triple curtains on each side. The barn has 12 ridge fans on top of the barn. Ventilation tubes run over each pen and we have installed circulation fans in each pen. All of the fans and curtains are designed to run on a computer-controlled program based on current weather conditions

The calves are born at the Hartley dairy and transported 26 miles to Exum. They are housed in individual pens for 4 to 5 days, where they are bottle-fed. Next they enter the group feeding and the feeding program is up to 8 liters a day with the weaning process starting at 45 days and complete at 60 days. Calves are moved to outside bedded pens at 70 days.

Results have not reached our expectations. Ventilation has been challenge number one. With all the fans we have in place as well as the curtains we can open and the natural wind in the High Plains I would think that it would be the last issue we would struggle with. If we had to do it over again I would make the investment in a ventilation engineer for the project. We have totally reworked the ventilation system in the past year.

The second challenge has been developing protocols for cleaning and maintaining the auto feeders that work for our situation. Our third challenge has been developing systems and protocols for handling group feeding. This includes monitoring the barn, detecting sick calves, vaccination and treatment protocols. The calf facility continues to be a work in progress. We believe we can develop it to reach our original objectives.

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