

Post-Weaning Period Critical Time for Dairy Heifers

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When managing young dairy heifers, much emphasis has traditionally been directed toward feeding and management protocols from birth through the first two months of life whilst they are being fed milk, and rightfully so. However, we also understand that feeding and management programs at and shortly after weaning are critical to the growth and overall health of these young dairy heifers. Some researchers have suggested that average daily gain at and shortly after weaning, as well as prior to weaning, may be positively correlated with later milk production of this heifer. Growth slumps after weaning definitely impact



rearing costs as they can impact age of puberty, breeding, and thus, age at calving. A smooth transition from milk feeding to feeding programs composed of grains and small amounts of forage is very important and, as such, requires careful management oversight for the best outcome for both the heifer and dairy owner.

Post-Weaned Heifers Efficiently Convert Feed into Muscle and Skeleton

Two- to four-month old heifers are more efficient at converting feed into gain than older heifers. Feed efficiency for a 3-month old heifer is approximately 30% versus 9% for a 15-month old heifer. Weight gain of younger heifers contains a higher percentage of lean muscle than fat. Cost per pound of gain are the lowest in this age group of heifers, thus behooving managers to make the most of growth during this age. We also know that 50% of the skeletal growth occurs before 6 months of age, thus protein intake is important to capitalize on skeletal growth.

Weaned Heifer's Rumen Still Developing

Feeding and management programs for recently weaned heifers need to take into consideration that these calves still have a developing rumen and associated rumen fermentation. They do not have the digestive capacity and ability to use nutrients that older heifers and cows possess. For example, nutritionists do not use urea in grain mixes for young heifers (less than 400 lbs heifers - large breeds). Digestion of feeds within the rumen generates microbial protein (protein used by the heifer) and volatile fatty acids. Volatile fatty acids (known as VFAs), most notable example is butyrate, are important in rumen papillae development (where VFA's are absorbed) and provide energy for the heifer and cow. These VFA's are produced in the largest quantity from the digestion of grains, not forage. Grain intake is important as it provides energy and protein needed for maintenance and growth of heifers. When hay is added to these diets, the amount fed is still a small percentage of the total diet consumed by these very young, recently weaned heifers.

Suboptimum intakes of grain prior to, at, and shortly after weaning can make this transition difficult for these calves which results in reduced growth around the time of weaning. For the first 2 to 3 weeks of life, milk-fed calves rely on their milk intake to provide the energy and protein needed. Providing starter is still important at this very young age as the small quantity along with water helps "start" rumen development. As they get

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older, both starter and milk provide the nutrients needed. After weaning, all of the energy and protein must be provided from solid feeds consumed. Calves need to be managed such that they are eating adequate amounts of grain, thus the reason weaning should be based on starter intake and not age. Today's calves may do best if they are weaned around 8 weeks of age and not younger. All calves are individuals and some may even do best if weaned at 10 vs 8 weeks; again dependent on their starter intake.

Management Practices Important for Smooth Transition

Attention to details around the time of weaning is critical for as smooth of a transition for these dairy heifers as is possible. As managers, we need to "listen to these calves". Not all calves will and should follow a set protocol regarding timing and procedures to accomplish weaning. Some calves may do best if they are weaned at a slightly later age. Regardless of the timing, some common threads exist regarding weaning management and feeding practices. These include the following, to name just a few.

- Starting time for the weaning process should be decided by starter intake and the performance and health of individual calves; not on a calendar or days/weeks from birth. Some calves may be ready to be weaned at 8 weeks of age whereas others are best weaned at 10 weeks of age.
- Starter intake prior to weaning impacts how well calves can navigate the weaning process. As milk intake is reduced, a higher proportion of the energy needed by the calf must come from starter. The amount of starter calves should eat prior to the beginning of the weaning process is not always agreed upon by dairy calf researchers. Amounts range from 1.5 lbs to over 4 lbs daily. Obviously, the more starter calves are eating at weaning and the week after weaning, the more energy they are consuming to maintain growth as milk consumption decreases. Thus, management programs that stimulate starter intake before, at, and the week after weaning are important. Energy shortages at and within the first 2 weeks post-weaning can increase a calf's susceptibility to disease.
- The type of milk feeding program (6 quarts vs 10+ quarts daily) impacts starter intake prior to the start of weaning. Calves on higher feeding rates of milk (as fed through automatic feeders- 10+ quarts/day) eat less starter and need more time to increase their starter intake. Decreasing milk intake over 10 to 14 days helps the calf more slowly adjust to the decreased amount of energy from decreased intakes of milk. Starter intake should increase as the amount of milk is reduced. Calves fed higher amounts of milk pre-weaning may do better with starters around the time of weaning that contain more starch to supply additional energy at a lower starter intake.
- During the weaning process, the amount of milk being fed should be reduced over time generally occurring over 5 to 14 days depending on the milk feeding protocols and other management related factors. Starter and water intake increases quickly as milk is removed from the diet.
- Forage intake after weaning is important, but it should make up a small proportion of the weaned heifer's diet at around 10 to 15% of the total intake of weaned calves. Thus, hay intake should be around 1 to 2 lbs daily in the recently weaned calf. Hay should not be offered in large amounts free choice, as they may consume hay at the expense of starter needed to maintain energy intakes. Weaned calves still do not have a fully functional rumen and need to be fed as such. Remember, intake of starter is important!!

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- Weaning time is very stressful on calves. To minimize stresses on these calves, management and feeding changes should be made one at a time over an extended period of time, not all at once. Feeding and management changes include, but are not limited to, changes in grouping, housing, and grain formulation (transition from starter to grower grain mix) from that fed during the milk feeding period. Disbudding and vaccinations should be avoided during the weaning period and immediately post-weaning.