Using Grazing to Obtain Optimal Growth in Dairy Heifers

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Using pastures to be the primary source of nutrition for growing dairy heifers can be a very economical way to develop replacement cows for your dairy. In addition to lowering costs, pasturing heifers can provide health benefits such as help develop strong feet and legs, support rumen development, and reduce pregnancy and calving complications. Other benefits include reduced manure collection and when the pasture system is properly designed and managed, reduced time in caring for the heifer group.

At what age does it make sense to start grazing heifers?

A newborn calf does not have a functioning rumen. By two months, the rumen starts functioning, but is not fully developed until 9 months of age. Prior to six months of age, you should limit the dry matter from pasture forage to less than a third of the total dry matter intake. You should also continue to supplement with grain until you reach nine months of age. Weighing the animals during this period of time is a good way to know if your supplemental feeds are adequately meeting your growth targets.

Growth Targets

Before I get to pasture management, I think it would be beneficial to review some growth benchmarks that are related to the average rate of gain (ADG) for dairy heifers. To maximize the health and milk production potential of the heifer, the nutrition program should fully meet the physiological growth needs without over-conditioning the heifer. The growth of the heifer is not a uniform static process. For example, heifers have the greatest capacity for frame growth in the first six months of their lives.

Here is an example for a herd where the mature cow weighs 1500 pounds. Let's assume the goal for this farm for age to first calving (AFC) is 24 months. That would mean that the heifer should be successfully bred at 15 months of age. A heifer reaches puberty at 50% of her dam's weight. The industry benchmark for a dairy heifer is that she is 55% of her dam's weight at breeding and 82% at calving. If the average heifer weighs 90 pounds at birth; and doubles its birth weight by two months when it is weaned, it needs to gain another 645 pounds to reach a weight of 825 pounds (55% of mature weight) when it reaches the age of 15 months. When you do the math, it needs to grow at 1.63 pounds/day for this period. Over the pregnancy period, it needs to reach 82% of its mature size (1230 pounds not including pregnancy weight) resulting in an ADG rate of 2.07 pounds/day. These weight gains are realistic for pasture raised heifers.

Pasture Quality

Nutrient demands of a growing heifer are based on its age, its weight, and your targeted ADG goal. Having this information in hand prepares you to manage your pastures for these heifers. Essentially, we want a pasture forage that is high in energy and protein. For the unbred heifers, TDN (Total Digestible Nutrients) would ideally be above 66% and crude protein at about 15%. For bred heifers, TDN should be above 63% and CP at 14%. Pasture of this quality will be able to nearly or fully meet the nutritional needs of the heifers. Ideally your nutritionist would periodically test your pasture forage to fine tune the supplement you may be providing.

So, the above works only if there is adequate forage present to allow for large mouthfuls of forage with each bite without needing to walk around looking for the next bite. Ideally this pasture would have at least 1500 pounds of available dry matter/acre. To achieve this, the forage (depending on grass and legume species) would be 8 to 15 inches high and quite dense.

Putting it all into practice

OK, let's move beyond the academic lesson and into what this actually looks like in practice. There are really three key "rules" to managing pastures to optimize forage productivity and quality in pastures: 1) Short duration of occupation in any given paddock (a paddock is a subdivision of the total pasture and is the basic building block of a rotational or intensive pasture management system); 2) Allow for adequate rest (non-occupation) to allow the forage to regrow; and 3) Leave adequate residual forage post grazing.

What this means in practice is creating paddocks that will be occupied for one to three days. When the heifers leave the paddock, approximately 50% of the forage remains (4" to 6" depending on plant species). The heifers won't return to this paddock until it has regrown back to 8" to 15" of height. Depending on the time of year and weather, this will typically be anywhere from 20 to 50 days.

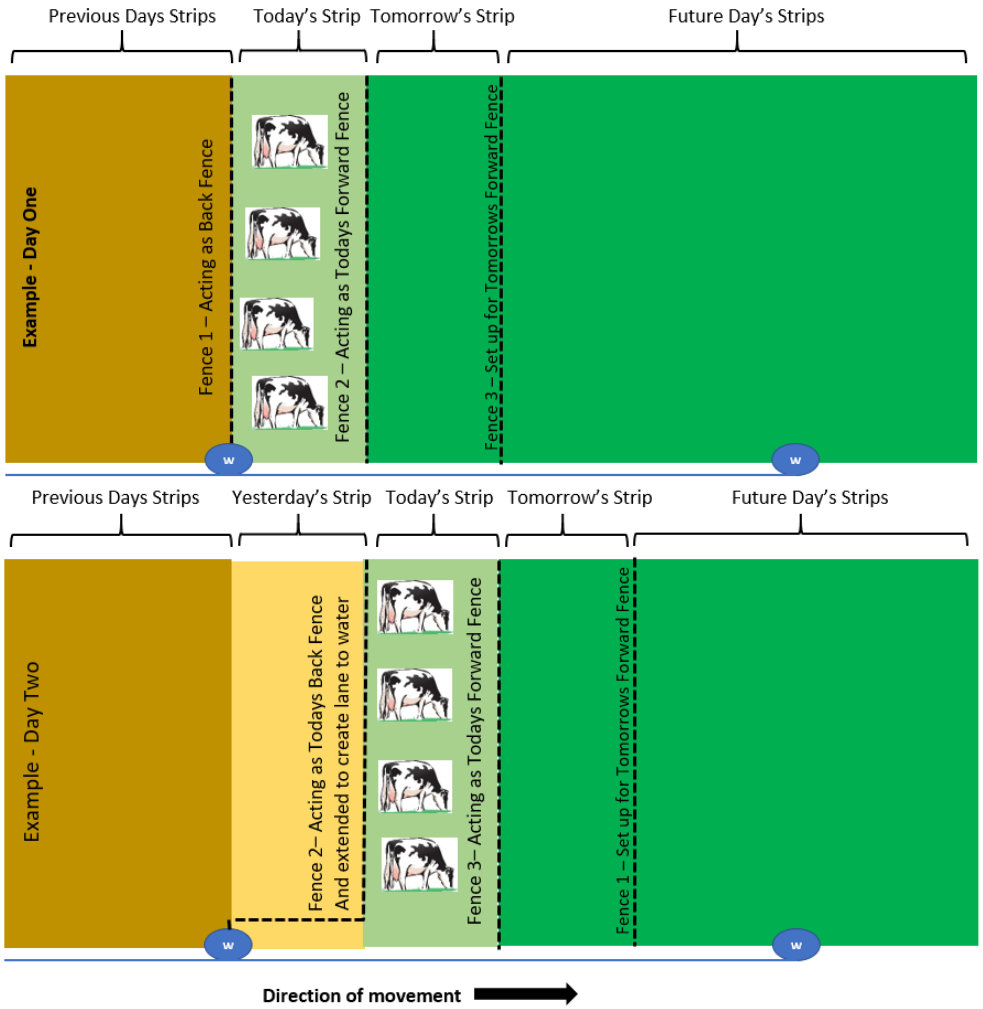
If you are moving your heifers every day, you would need 51 paddocks. If you move them every three days, you would need 18 paddocks. The paddock size is determined by the number of animals, how much each animal is expected to eat, and the number of days of occupation. The good news is that with careful observation of the starting versus residual amounts of forage with each move, you quickly get a feel for how large to make each paddock.

Strip Grazing – An Efficient Way to Rotate Heifers

One easy way to move heifers to fresh pasture is called strip grazing where the heifers are given a fresh 'strip' of grass every day. This is typically achieved using only three reels of polywire. Imagine three single wire fences parallel to each other. The heifers are contained by two of the fences referred to as the ***forward*** fence (separating the heifers from where they currently are and tomorrows paddock); and the ***back*** fence (separating the heifers from where they currently are and where they were yesterday) . The third fence is set to be the next day's forward fence.

Each move involves letting the cattle into the next paddock. The previously set up forward fence becomes the new forward fence; yesterday's forward fence becomes the back fence; and the back fence can be moved to be the next forward fence.

For the purpose for access to water, you may not move yesterday's back fence right away (essentially leaving it in place to continue to act as the back fence); rather you would take down yesterday's forward fence and set it up to be the next day's forward fence. The alternative is to use some of the remaining wire on the back fence reel to create a lane back to the water. The diagram below shows this second option.



This moving of heifers and making paddocks may sound like a lot of work. But with a good fence energizer and grounding system combined with geared reels of polywire and step-in posts, it typically only takes 15 to 30 minutes to move the heifers and set up the next paddock. Compare this to the time and cost it takes to put up feed, deliver the feed to the animals, and then pick up and spread their manure.

With a well thought out grazing system, using pastures to develop your replacement cows can be a very efficient and rewarding management strategy that can reduce your bottom line expenses, reduce labor, and help you meet your performance targets such as Age to First Calving and ideal body weights at breeding and calving.

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