

PASTURING DRY COWS AND HEIFERS

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Dry Cow Management

The dry period of the dairy cow is a critical determinant of the productivity and profitability of the dairy enterprise. Traditionally, dry cows have been considered “non-producers” in the herd, and these animals typically have not been managed as intensively as the lactating cow. Kick ‘em into the back 40 and forget ‘em.

We now realize that this period in the life cycle of the cow is when dramatic metabolic and physiological changes are occurring in preparation for the next lactation. Many herd problems can be traced to nutrition and management during the dry period, including low peak milk, sluggish intake post-calving, metabolic disorders, reproductive problems, body condition loss, and mastitis. How these cows are managed during this period can have a dramatic effect on the health and productivity of the dairy herd. Lost milk production, veterinary charges, extra labor for cow care, drugs, and discarded milk amount to \$285 for each retained placenta, \$340 for displaced abomasum, \$334 for milk fever, and \$145 for ketosis. In addition, research has indicated that properly managed dry cow programs will result in an additional 2000 lb of milk per cow per year. By combining these lowered expenses and increased revenue from additional milk sales, preventing transition cow problems can make a significant economic impact on the farm.

Pasturing Dry Cows

Pasture has long been used for dry cows, both as a form of exercise as well as a low cost forage source. Few controlled studies, particularly in the United States, have been conducted with dry cows on pasture. Although high quality pasture can fulfill the nutrient requirements of early dry cows (at least 4 weeks prior to calving), pasture alone typically does not provide sufficient energy for the close-up cows (within 3 weeks of calving). At this point, it is usually prudent to supplement pasture with a concentrate source to help prevent ketosis problems, maintain body condition, support fetal growth, and provide the cow with sufficient energy to prepare for the upcoming demands of lactation.

Pasturing dry cows may be beneficial to the health of the animals in many ways; including feet and leg improvement by getting the cows off concrete and increased calving ease due to greater exercise. However, pastures can potentially pose some health threats. Grass pastures in the northeastern United States tend to be quite high in potassium, some in excess of 3%. These potassium levels have the potential to cause health problems, specifically milk fever, when fed during the latter parts of pregnancy. Some herds have more problems than others, so blanket recommendations are difficult to establish. If milk fever is a problem, there are some alternatives: remove dry cows from high potassium pastures during the last 3-4 weeks of pregnancy, establish pastures with lower potassium levels specifically for dry cows (perhaps through strategic fertilization), or dilute the effects of the high-potassium pastures with forages and feeds containing lower potassium levels.

A study conducted at Penn State evaluated pasturing close-up dry cows on high potassium grass pastures and supplementing a concentrate pellet with or without anionic salts. This study showed that pasture was a viable option for close-up cows, but that feeding anionic salts while on pasture was of no benefit, as we were not able to decrease the DCAD (dietary cation-anion difference) to acceptable levels due to the high potassium (3.2% of DM) in the forage, without causing feed refusal or the potential for mineral toxicity problems. No clinical cases of milk fever or other metabolic problems were observed in either group of cows. A recent trial conducted in Australia supports these findings. Close-up dry cows were fed pasture plus barley and orally dosed with anionic salts to achieve 4 DCAD levels. The authors concluded that the addition of anionic salts to close-up dry cow rations was not a practical means of preventing milk fever in pasture-fed cows due to the extremely high DCAD found in their pastures (pasture potassium = 3.37% of DM).

As with any pastured animal, the value of the pasture in meeting nutrient requirements of the dry cow is dependent upon both quality and quantity of forage. Forage testing is an important management tool, and should be done throughout the growing season in order to build a history of the forage nutrient content during different stages of growth and environmental conditions. Producers must take a hard look at dry cow feeding and plan what to feed, rather than feeding whatever is available. Pasture can be a valuable tool in the dry cow program as a low-cost forage source as well as providing exercise to improve foot and leg health and also to decrease calving difficulty.

Heifer Management on Pasture

Pasture-raising heifers can be a cost-effective method of raising heifers when either raising your own replacements or acting as a contract heifer-raiser. However, they must be managed... they can't simply be placed on the back-40 and left to fend for themselves if they are expected to enter the milking herd at a specific age, body condition, and body weight. Just like any other group of grazing animals, pastures must be rotated, supplements must be provided, and they must be observed on a regular basis.

Just like mature animals, heifers (and dry cows) should be rotated on pastures. However, they don't necessarily need to be rotated daily. If pasture allowance is adequate, heifers can be rotated every 2-3 days. This will decrease labor requirements for this group, and will also help maintain pasture productivity by removing the animals before re-growth occurs and the animals damage the plants by re-grazing that tender re-growth.

Heifers less than 6 months of age, particularly those not yet weaned, are usually better off kept in the barn, or at least offered other feeds while out on pasture. The digestive system of these young calves is not developed enough to handle high forage diets. These animals rely on getting most of their nutrients from grain. Also, young heifers tend to suffer more from heat, competition from other, older heifers, fly strike, and internal parasites.

Heifers that are 6-12 months of age can grow very successfully on pasture, provided they are supplemented with several pounds of a concentrate mixture throughout the season. This supplement will provide them with additional energy for growth as well as energy to help recapture the excess nitrogen found in pasture.

Heifers greater than 12 months of age can often be raised on good quality pasture alone in spring and early summer. However, it is important to realize that as pasture quality declines during mid- to late-summer, heifer growth rates will also decline unless forage supplementation

(hay or silage) is provided. Some concentrate may also be necessary, depending on the quality of the forages provided.

All heifers should have adequate shade and free access to good quality, clean water. Ponds and streams that look good in spring may become stagnant or dried up in late summer.

Heifers should also be treated regularly for flies and internal parasites in order to maintain adequate growth rates. Parasite problems are most likely to occur during a heifer's first season on pasture. Animals not previously exposed to parasites have little or no resistance to digestive tract parasites. Parasite eggs readily over-winter in Pennsylvania. These eggs hatch into larvae under warm, moist conditions in spring weather. Heifers can quickly become heavily infected by early- to mid-summer. When this occurs, heifers grow slower because they are less feed efficient. They may also develop diarrhea and become anemic. To avoid parasite build-up, rotate pastures and avoid over-grazing pastures. De-worming three to six weeks after turnout on pasture will greatly reduce parasitism.

Pinkeye can also be a problem for heifers during the summer when on pasture. Fly control is important at this time in particular. Affected heifers should be brought indoors for treatment and confined out of direct sunlight until the condition is cured.

Trace mineral salt should always be available to heifers on pasture. Be sure to check that selenium is present in this salt. Also be sure calcium and phosphorus are present in this mix (or separately). Research has shown that heifer diets that are low in phosphorus can delay the onset of estrus in these animals. However, in today's age of high soil and forage phosphorus levels, it may be prudent to first analyze the forage for phosphorus content prior to supplementation.

Heifers can be utilized in a leader-follower system where the mature cows graze first, and the heifers are followed behind them to utilize more of the forage. Naturally, you will have to decrease the grazing time in each paddock for the mature cows to allow for sufficient forage availability for the heifers. However, a leader-follower system is not recommended for herds that are on a Johnes eradication program. Ideally, "heifer pastures" should be identified where only heifers are grazed. Do not graze the mature cows in these areas, and do not spread manure on these heifer pastures to prevent transmission of the Johnes organism from the manure of mature cows. Since younger heifers are more susceptible, it is especially critical that they be kept separate from any contact with mature cows, their pastures, or their manure.

Economics of Raising Heifers on Pasture

Average daily gains can be maintained on high quality pasture similar to those obtained in confinement, and the cost per unit of gain is low compared with confinement rearing. Table 1 illustrates an example of raising heifers on pasture.

Table 1. Cost of grazing heifers.

Annualized cost for improved pasture	\$80-100/A
Grazing season heifer weight gains	350-400 lb/A
Pasture costs/pound of gain	20-29 cents
Supplement cost	\$145/ton
Average supplement fed	6 lb
Average daily gain of heifers	2.25 lb
Supplement cost/pound of gain	\$0.195
Total cost/pound of gain	\$0.395 to 0.485

Adapted from Petzen and Conway, "Pro-Dairy, The Manager", February, 2003.

Now let's compare this to a confinement situation. Published reports state that grazing 80% of heifers from 5 to 24 months old would save up to 55 cents per pound of gain (20% of heifers at any given time are too young for effective grazing).

How much will a 50-cow herd save by grazing replacements? Let's take the above values in Table 1 and compare them with confined heifers also gaining 2.25 lb/d.

40 heifers are eligible grazers.

40 heifers x 2.25 lb. of gain/day = 90 lb. of gain/d

90 lb. of gain/d x 30 cents/lb of gain saved = \$27/d/50 cows

180-d grazing season x \$27/d = \$4,860/50 cows

Pasture, plus some good management, can provide a low-cost, labor-efficient system for raising heifers. Maintaining proper growth rates throughout the entire summer requires additional feed and effort, but will help result in well-grown, healthy heifers.