



## Proper Dry Cow Management

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A cow's lactation begins on the day that she's dried-off rather than at calving. Proper management of dry cows often is ignored on many dairy farms. Dry cows often are placed in a back pasture and forgotten. On other farms they remain with the milking herd and may be over-fed, especially if they enter the milking parlor and consume left-over grain, or if corn silage is available free-choice. Proper dry cow management is important in preparing cows for the next lactation. Many disorders (e.g., milk fever, abomasal displacements, retained placenta), uterine infections, lowered milk production, and clinical mastitis can be avoided. How the dry cow is managed also may affect the health and performance of the newborn calf.

Dry cow management includes attention to proper procedures for drying-off cows, feeding a special ration, and concern about the cow's environment. Breeding and mastitis problems can result from infections developed during this time. Cows are most susceptible to new mastitis infections during the first two weeks of the dry period, the two weeks before calving, and the two weeks after calving.

### Drying-off

The cow's udder needs time to rest and regenerate. A summary of DHI records shows that the dry period should be at least 40 days long, preferably 50-70 days. Cows dry less than 40 days have lower milk yields during the next lactation. Set aside one day a week for drying-off cows. Check your breeding records to determine which cows will calve within 50-60 days. Don't skip a week or cows will end up with short dry periods. In addition, when cows are treated with an antibiotic for mastitis at drying-off, a 50-day dry period is recommended to avoid antibiotic residues in milk after the cow freshens.

**Mastitis Dry Cow Therapy:** On the average, 40-50% of the cows in the herd may have subclinical bacterial infections present in the udder. Milk appears normal but after culturing on a blood agar plate, bacteria can be isolated from the milk. Somatic cell counts may be low. Dry cows up abruptly. Do not milk once-a-day or every-other-day for a short period. Administer an effective dry cow mastitis product on the day of drying-off into every quarter of every cow. **Before treatment, cleanse the teat ends** with alcohol. Carefully remove the protective tip from the treatment tube cannula. Do not use tubes if the unprotected cannula has become contaminated in any way, e.g., dropped on the floor, swatted by the cow's tail, etc. Insert the cannula only up into the teat canal. Do not insert the cannula fully. **Immediately after treatment,** teats should be dipped in an effective **teat dip.** Dry

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cow therapy and teat dipping effectively reduce udder infections, unless damage to the udder by bacteria is too severe or if scar tissue has barricaded the infection. Dry cow therapy is 90-93% effective against subclinical Streptococcus agalactiae infections and 70-80% effective against Staphylococcus aureus. Treatment of staph infections during the lactation may be only 50% effective or less. New infections develop in 10-15% of cows not treated at drying off. Some veterinarians recommend checking udders a week after drying off. If milked at that time, administer dry treatment a second time.

Other Shots: Many farms administer BVD vaccine and vitamin E-selenium injections at drying-off. In many herds, BVD shots at this time result in healthier calves at birth and fewer incidences of "weak calf syndrome." Ohio State University studies have shown reduced incidence of retained placenta and mastitis after calving by injecting cows with 680 I.U. of vitamin E plus 50 mg of selenium at 3-4 weeks before expected calving. These injections stimulate an immune response and provide an ability to destroy disease-causing organisms. Many farms find it inconvenient to administer vitamin E and selenium at this time. Although unsubstantiated by research, the response may be effective if the injections are administered at drying-off if cows receive a mineral mix supplemented with selenium. Selenium-Vitamin E injections will not reduce the incidence of retained placenta below a normal level of 10%.

### Housing and Environment

Dry cows need to exercise and to get off concrete. The dry lot should provide numerous shade trees and be well drained. Dry lot location is an important factor in providing an environment with reduced bacterial populations. The dry lot on many farms is located down hill or on the lower side of the housing and milking operation. This is almost always associated with drainage ditches, mud holes and/or ponds containing high counts of most of the bacteria associated with the total dairy operation. The best solution to this problem is to locate the dry lot up hill from the milking operation and fence off all ponds, swampy areas, and ditches. Many cases of coliform mastitis and/or reproductive infections have developed from such conditions. If only one or two shade trees are present, cows congregate under these trees on hot days. Considerable manure build up occurs over a short time. Since manure is loaded with coliform and other destructive organisms, too little shade can result in serious udder infections. Florida studies have shown that adequate shade can result in a 1,000 lb increase in milk during the next lactation.

Housing should be well ventilated. Virginia freestall barns are built with an opening along the roof ridge and also under the eaves. Freestalls must be kept clean and dry. Many Virginia freestalls are filled and packed with dirt to curb height. A "bedding" board, located at curb level, minimizes dig-out of stalls.

### Feeding Dry Cows

A cow's body condition at drying-off should be the same that is desired at calving. Body condition scores of 3+ to 4 are desired. Adequate body reserves are required to attain and hold top production during early lactation. Cows in poor body condition will drop off in milk production and are difficult to get bred.

Separate dry cows from the milking herd. When left with the milking herd, dry cows have access to corn silage or high quality legume. Dry cows entering the parlor consume concentrate left in the feeder or may purposely receive concentrate. When

dry cows are overfed, many complications may develop shortly after calving, including increased "downer" cows or milk fever, ketosis or acetonemia, displaced abomasum, retained placenta and metritis, and coliform mastitis. During the next lactation, fat cows lose very little body weight, and peak milk production is only 60-70 lb daily for Holsteins rather than 80-100 lb. Excessive energy consumption results in a buildup of fatty tissue in the liver. This interferes with normal metabolic processes. The damage may be permanent.

The desired condition in dry cows (3+ to 4 score) is where the chine and loin areas are rounded and continue into the rump. The back should begin to show some fat deposition. The hips and pins are round. Some fat should be deposited around the tailhead and pin bones. For more information, see Dairy Guidelines Series 404-100, 404-101, and 404-104.

Use the latter part of the lactation to properly condition the cow. Energy in the ration is used more efficiently for fat deposition during lactation than during the dry period. By calving time, cows must have acquired desired body condition. During the early part of the lactation, high-producing cows do not consume sufficient feed to meet their nutrient requirements. Milk production peaks at 4-6 weeks after calving; maximal feed intake occurs at 9-10 weeks. The extra energy needed for milk production is supplied by breakdown of body fat.

Dry cows should be fed a special dry cow ration. The ration dry matter should contain 10-12% crude protein, 55-60% TDN, at least 33% acid detergent fiber, 2.6-3.2 g calcium per lb, and 1.4 g phosphorus per lb. Corn silage should be limited to 30 lb per day for 1500 lb cows. Feed at least 10 lb hay, preferably grass hay or grass-legume mix. Do not feed legume alone, as it contains excessive protein and calcium. Examples of dry cow rations are shown in Table 1. Amounts are expressed per 100 lb body weight. Multiply the amounts by average weight and divide by 100. For example, the factor would be 15 for dry cows averaging 1500 lb (factor = 1500/100 = 15). One suggested ration (C) would be 30 lb silage, 10 lb hay, 1 lb corn, and 2.25 oz mineral.

Table 1. Feeding Guidelines for Dry Cows at Different Body Weights

Feedstuffs	Example feeding programs		
	A	B	C
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Grass hay	2.0	0.67	-
Alfalfa hay	-	-	0.67
Corn silage	-	2.0	2.0
Shelled corn	-	0.13	0.06
Soybean meal	-	0.067	-
Dicalcium phosphate	-	0.1 oz	0.15 oz
Limestone	0.1 oz	0.2 oz	0.15 oz

A good quality bluegrass-clover pasture is excellent for dry cows, providing there is shade and fresh water, but make sure there are no ponds, drainage ditches, etc. Such a pasture probably needs no supplementation. Clover and bluegrass contain considerable amounts of vitamins A and E. Stored forages lose vitamin levels with

time. The dry cow ration should provide 50,000 I.U. vitamin A, 20,000 I.U. vitamin D, and 500 mg vitamin E daily if cows are not injected at drying off or if fresh forage is not provided.

### **Two weeks Before Calving**

Isolate cows due to calve from other dry cows and the milking herd. A small pasture beside the barn or near the center of activity is ideal. Feed provides nutrients both to the cow and to the microbial population within the cow's rumen. Rumen microorganisms require adaptation to changes in the ration. A dramatic change after calving from a high forage, high fiber ration to a high concentrate, low fiber ration can throw cows off-feed or result in ketosis or acidosis. The cow must be conditioned so that she can consume large amounts of carbohydrates and proteins after calving. Starches in concentrates are rapidly converted to short-chain acids. Microbes that utilize these acids are slow to develop. The cow spends less time chewing her cud, and therefore reduces the amount of saliva that is added to the rumen to buffer the increase in acid production. A similar phenomenon occurs when finely ground or chopped feeds are consumed.

At 10-14 days before expected calving, offer limited amounts of corn or hay crop silage that is being fed to milking cows (25-30 lb per day). If possible, provide 10 lb hay. Introduce the milking herd concentrate but restrict the amount to 4-8 lb per day. Hold the amount constant until after calving. This ration would approximate 27-29% acid detergent fiber. The amount of concentrate should never exceed 1 lb per 100 lb body weight and probably doesn't need to exceed 0.5 lb. Avoid free-choice salt or protein supplement. Very little is known regarding the cause of udder edema, but excessive salt, energy, or protein intakes may contribute.

Keep fresh cows out of the milking herd for at least three days after calving. After 3-5 days, feed the milking herd ration. If milking cows are grouped, do not put fresh cows into the high group for two weeks after calving. When concentrate is offered at milking, increase the amounts gradually (2 lb increments). If cows do not receive corn silage until after calving, consider adding sodium bicarbonate to the ration to buffer the dramatic change in feeds.

### **Conclusions**

The management of dry cows needs as much planning and attention as milking cows. Certain precautions are necessary at drying off and around calving. Neglecting facilities, environment, and feeding can dramatically influence the long-term success in a herd.