

After a few days, the first lactation cows should be placed in a separate group for maximizing intake and production. English workers reported an increase in milk production of 1,573 lbs of milk per cow when first-calf heifers were grouped and fed together compared to those blended with older cows. Since the greatest advantage is more likely to occur during the first 120 days of lactation, the first-calf heifers could be blended with the remaining herd after 150 days or as soon as desirable. If left together as a single group for the total lactation, over-conditioning may become a problem.

Individual cows may vary some from the schematic drawing shown in Figure 1. Note that weight lost in early lactation should be regained toward the end of lactation with less weight gain during the dry period. Cows appear to be more efficient in gaining weight toward the end of lactation and less efficient during the dry period.

Feeding The Dry Cows

Nonlactating or dry cows should be properly managed during the dry period to assure top production in the subsequent lactations. Most research indicates that a dairy cow should be given a dry period of 45–60 days. The greater her production, the more likely that her body has been depleted of the nutrients used in milk secretion and the longer the dry period required to replenish the losses and to store adequate reserves for the next lactation. Also, the dry period allows the mammary system time to repair and regenerate, and to gain new stimulation for lactation as a result of parturition.

Body condition scoring (BCS) is rapidly emerging as an effective tool in monitoring individual cow energy reserves. The system most commonly used was developed in Virginia and scores the cows from 1 to 5, with 5 being the more obese cow. The objective of BCS is to identify suboptimal feeding practices and correct them as soon as possible. The desired score dry off is 3.0–3.5 and at calving 3.5–4.0. If body condition scores are outside the above ranges, management steps should be taken to correct the situation. Dry cow feeding practices should be aimed toward maintenance of condition scores.

Good body condition at calving is important because many high producers cannot consume enough feed to meet their energy needs in early lactation, making it necessary to draw on body reserves during this period. Table 4 shows the nutrient requirements of dairy cows during the last two months of gestation or during the dry period.

Table 4. Nutrient requirements during the dry period (last two months of gestation) (NRC 1988).

Body Wt.	Crude (lb)	NEL (Mcal)	TDN (lb)	Ca (lb)	Phos (lb)
900	1.54	9.45	9.21	.059	.036
1200	1.90	11.72	11.43	.079	.048
1400	2.17	13.16	12.83	.092	.056
1500	2.31	13.86	13.51	.099	.060

Ingredients and Their Composition

Table 5 contains a list of the more common feed ingredients used in Florida. Values given on ingredients are dry matter (DM), crude protein (CP), bypass protein (BP), total digestible nutrients (TDN), net energy for lactation (NEL), fat, calcium (Ca), phosphorus (Phos), sodium (Na), magnesium (Mg), potassium (K), and sulfur (S). The TDN and NEL refers to the energy content of the feed; either may be used in formulating rations.

The Importance of Fiber

The reduction in roughage content of the ration, as a result of high-grain, is closely related to changes in milk fat test and has been associated with metabolic problems, such as acidosis, hoof problems, displaced abomasum, liver abscesses, and a general decline in health. Adequate fiber and/or quality forage promotes good health and better performance.

Terminologies used in describing the fiber content of rations are crude fiber, effective fiber, acid detergent fiber (ADF), and neutral detergent fiber (NDF). Both ADF and NDF are newer ways to describe fiber and will be discussed later.

The beneficial aspects of feed fiber are primarily due to its effect on regurgitation (cud chewing), chewing, salivation, rumen pH (acidity), and rumen function. Chopping, grinding, or pelleting the roughage tends to reduce its fiber value and digestibility. Finely ground roughages may contain little effective fiber.

In feeding lactating cows, there is usually an economical advantage in using a maximum amount of forages and byproduct feedstuffs. To be successful, a maximum level of energy intake must be maintained in order to maximize production. Finding a consistent method of identifying the factors that maximize both intake and production has been the goal of considerable