

Feeding Systems and Strategies for Expanding Dairies

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Feed costs comprise 40-50% of the cost of milk production. Implementation and management of feeding systems to sustain high levels of milk production and control feed costs are crucial to the profitability of expanding dairies. Considerations regarding feed mixing and delivery, ration ingredients, feed bunk management, and cow grouping are included in this discussion of feeding systems and strategies for expanding dairies.

Feed Mixing and Delivery

The total mixed ration (TMR), truck or trailer mounted mixer, is the predominant means of feed delivery on expanding dairies. Benefits of TMR include increased milk production, enhanced use of low cost alternative feed ingredients, control of forage:concentrate ratio, lower incidence of metabolic and digestive disorders, and reduced labor inputs for feeding. Mobile TMR mixers augment the ability of dairies to feed byproducts from flat storage, silages from bag or bunker silos, and multiple groups of cattle at varying locations.

Types of mobile units include auger, reel auger, and vertical screw mixers. These can all process hay to varying degrees with the vertical screw mixers having the greatest capacity for handling long hay. Western hay is often fed on expanding dairies to provide effective fiber in transition groups and to extend forage inventories. Here is some advice when adding long hay to the TMR: process hay first then mix with other ingredients, do not over mix the ration, do not dry out the ration too much, check mix quality, check separation upon dispensing from the mixer, check separation in the feed bunk. If any problems are noted then the amount of hay added to the TMR may need to be reduced. The feeding of western hay usually should be kept to a minimum anyhow because of its high cost per ton.

Common TMR supplementation strategies include: custom mineral/vitamin/additive mixes and byproduct feeds added individually to the TMR each day, custom mineral/vitamin/additive mixes blended weekly on-farm with dry byproduct feeds to make a surge mix for adding to the TMR each day, or feed company custom-formulated energy/protein/mineral/vitamin/additive supplements added to the TMR either alone or in some combination with byproduct feeds each day. Key factors to consider when deciding which TMR supplementation strategy to employ are convenience or mixing/feeding time, employee and ration advisor input, flexibility, quality control, and cost.

Three keys to successful TMR management are: checking moisture content of wet feeds routinely and adjusting the TMR accordingly, not over mixing or over processing the TMR, and implementing a good TMR program for transition cows.

Ration Ingredients

Corn silage comprises a greater proportion of the forage dry matter on expanding dairies. Milking cow rations with half to two-thirds of the forage dry matter from corn silage are common. The rise in corn silage feeding on expanding dairies is related primarily to a 1.5-2X greater dry matter and energy yield per acre, more consistent forage quality, and easier filling of horizontal silos for corn silage versus haycrop silages. Also, corn silage lends itself more easily to custom harvesting which is becoming more common on expanding dairies. Use of crop processors on custom harvesters widens the window for effective harvest of corn silage.

Usually, two or three acres are needed per cow to raise the forage or forage plus grain, respectively, for a cow and her replacement. Strategies to minimize land needs for expanding dairies include producing more corn silage versus haycrop silage, raising only forage and purchasing all grain, and having replacement heifers custom raised off the farm. Expanding dairies purchasing grain may still want to feed high-moisture corn, since it can often be purchased at lower cost in the fall and many expanding dairies have existing storage for high-moisture corn. Corn ensiled at 30% moisture is a highly digestible starch source, but it must be properly preserved and processed to support high levels of milk production. Byproduct feeds, hominy, corn gluten feed and wheat middlings, that can serve as starch replacers and custom-formulated energy feeds should also be considered by expanding dairies that are purchasing grain.

Horizontal silos are common for storing forages on expanding dairies. Silo bags provide a good interim strategy for making the transition from upright silos to bunkers. Keys to making high-quality silage include: harvesting at optimum stage of maturity, chopping at right moisture content and theoretical length of cut, filling the silo rapidly, packing well, and covering properly. Often packing and covering of bunker silos are not sufficient to prevent high dry matter losses or ensure high-quality silage. For this reason, silo bags may offer a good alternative to bunker silos. Bags also offer more flexibility for segmenting forages by type and quality so that inventory management can be improved. Bunker silos need to be sized appropriately and kept narrow enough so that the face can be managed evenly with enough removed each day to prevent heating. One strategy for expanding dairies is to put corn silage in bunker silos and haycrop silages in silo bags. Silo bags need to be packed with adequate tension on the bagger, kept out of the mud, and placed in areas where punctures to the plastic are minimized.

Feed Bunk Management

Bunk Space - Cows should have 1.5 to 2.0 ft. of bunk space per cow. Four-row and six-row barns allow for 2.0 and 1.5 ft. of bunk space per cow, respectively. Four-row barns are compatible with the use of self-locking head gates for animal care, because with 2 ft. of bunk space all cows can eat or lock at once. Use of self locks in barns with only 1.5 ft. of bunk space

per cow are not efficient for animal care and may reduce feed consumption. Crowding bunk space below 1.5 ft. per cow should only be done on mid or low group cows. Transition cows need ample bunk space.

Feed Access Time - Cows need to have access to the TMR at least 16-18 hours per day. In situations where bunk space is limited, access to TMR is especially important.

Timing of Feeding - Cows have major TMR meals after milkings. Fresh TMR should be available to cows after they come back to the bunk after the morning milking. The TMR should be pushed up before cows come back to the bunk from the other milkings.

Water - Water is your cheapest nutrient and it is the nutrient required in the greatest amount. Low water consumption reduces feed intake which lowers milk production. Provide easy access to unlimited, clean, fresh water. Use tank waterers to maximize water consumption. These tanks must be kept clean. Allow cows easy access to water between the milking parlor and the feed bunk. Cows should not have to travel more than 50 ft. from the feed bunk to the water tank. Provide more access to water during periods of heat stress.

Fence-Line Feeding - Cows produce more saliva and show less rooting, sorting and tossing of feed when allowed to eat in a grazing-like position about six inches higher than where they are standing. Drive-by fence-line feeding also makes it easier to feed for some refusal and to push-up feed frequently to stimulate intakes.

Feed Refusals - Cows should not be fed to an empty bunk. Feeding to an empty bunk restricts feed intake. Feeding for 5% refusal is a common recommendation. This is particularly important for high group and transition group cows. Refusals can be pushed out and fed to replacement heifers or low group cows.

TMR Push-Up - This is important to keep fresh feed accessible to cows and to encourage cows to come to the bunk and eat. Pushing up feed four to six times each day is common.

Frequency of Feeding - Feeding the TMR once per day has been successful in research trials and on high-producing commercial dairies. The advantage to this is less labor required for feeding and feed mixing is controlled by one labor shift. Frequent TMR push up is the key to making once daily feeding work. Also, the frequency of feeding should be increased anytime the TMR heats in the bunk during periods of heat stress or during periods of feeding unstable silages. Those feeding at outside, uncovered bunks may need to increase feeding frequency during periods of inclement weather.

Cow Grouping

Group milking cows according to level of milk production and body condition. This reduces the over-feeding of nutrients and therefore feed costs. Production strings may range from one to four depending upon herd size and level of production. Minimize production drops when changing groups by moving cows in groups and narrowing the spread in energy density between the

rations. Proper grouping to regulate body condition also helps minimize metabolic and digestive disorders at next calving. Maintaining a separate group for first lactation heifers to restrict competition at the feed bunk usually enhances their performance. A transition group for fresh cows may improve peak production and reduce fresh cow health problems.

Implement good dry cow and transition cow feeding and management programs. Expanding dairies that have not implemented sound feeding and management programs during the dry and transition periods often experience: low peak milk yields, excessive loss of body condition, poor fertility, metabolic disorders, such as fatty liver and ketosis, digestive disorders, such as ruminal acidosis and displaced abomasum, high veterinary costs, and high involuntary cull rates. These are all road blocks to profitability. Design facilities with the ability to feed and manage the following groups in mind: far-off dry cows, close-up dry cows 2-3 weeks prior to calving, and fresh cows 2-4 weeks postcalving.