

## **Transition Cows: What Are Some of the Basics?**

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The transition period discussed here is defined as 3 weeks before calving to 3 weeks after calving - the most stressful in the life of a cow. Cows need the best care they can get during this period if producers want to have a successful dairy enterprise.

Basics in managing transition cows include adequate nutrition and environment. During the transition period nutrient needs increase whereas feed intake decreases. Very challenging, isn't it? But cows can do it with some help. Nutrition is key, but a lot of the problems we sometimes see on dairy farms are non-nutritional and involve management, such as cow comfort.

During the transition period, the cow is going from the pregnant, non-lactating stage to the non-pregnant, early lactation stage. During the last weeks of pregnancy, feed intake decreases by about 30%, but at the same time, nutrient requirements are increasing. It is important to feed a nutrient dense diet to compensate for this lower intake. The rumen needs to be adapted to the higher grain lactation diet, and this should be done gradually. It is strongly recommended that herds have a close-up dry cow group (last 3 weeks of pregnancy) and a fresh cow group (2 to 3 weeks after calving). Reasons are not only nutritional, but management related. Heifers can benefit from a longer close-up period of about 4 to 5 weeks and large herds could have close-up and fresh heifer groups.

### **Transition Program Goals**

Iowa researchers identified four physiological goals that the transition cow program needs to achieve:

1. Adapt the rumen for the higher energy lactation diet.
2. Maintain normal blood calcium concentration.
3. Build and stimulate the immune system.
4. Maintain a positive energy balance to avoid fatty acid build-up and subclinical ketosis.

### **Close-up Cows**

Some of the feeding strategies needed during the close-up period to achieve these goals were outlined by Drackley, Goff, Grummer, Reneau, Shaver (summary from various articles):

1. Body condition score at dry-off should be 3.25 to 3.75 (BCS scale 1 to 5). Condition should be maintained during the dry period. Excessive body condition at calving can increase incidence of ketosis and fatty liver.
2. Increase grain feeding to 0.5 to 0.75% of body weight.

3. Target 35 to 40% nonfiber carbohydrates as a % of DM.
4. Feed high quality forages with sufficient effective fiber.
5. Limit fat to 1/4 to 1/3 lb per day.
6. Feed low potassium forages; balance for potassium concentration less than 1.5% of diet DM (get close to 1% as possible).
7. Provide adequate magnesium (0.4% of diet DM) and calcium (1 to 1.2% of diet DM).
8. Feed adequate selenium (0.3 ppm) and vitamin E (2000 IU per day).
9. Supply extra trace minerals such as copper, manganese and zinc to account for decline in feed intake.
10. Feed adequate crude protein (cows need 12 to 13%, heifers 15% of diet DM).

### **Fresh Cows**

Calving and the change to lactating status are very stressful in the life of a cow. They need a lot of care. Assign your best employee/person to monitor this group of cows.

Maternity facilities must be clean, dry, well lit, well ventilated and comfortable. After leaving the maternity pens, cows should ideally be moved to a fresh cow group. There is also benefit in having a separate heifer group, because heifers are smaller and do not compete as well at the feed bunk.

The first 1 to 2 weeks after calving set the stage for the entire lactation. Studies have shown that for each 1 lb increase in peak milk, there is a 220 lb milk production increase for the entire lactation.

### **Monitoring Progress**

After calving, it is important to optimize dry matter intake as soon as possible. Hutjens suggests monitoring feed intake by rating how the cow consumes fresh feed on a scale of 1 to 4 (1 = 0 to 33% consumed; 2 = 33 to 66% consumed; 3 = 66 to 90% consumed; 4 = all consumed). Cows off-feed will require special treatment. Observe chewing and rumination activity. Rumen movements should be monitored using a stethoscope – healthy cows have about 1.5 to 2 rumen movements per minute.

Body temperatures should be recorded daily. The goal is to be below 103° F for mature cows and 102.5° F for heifers. Uterine discharges should be checked and a ketone test on the cow's urine or milk is recommended.

### **Ration Recommendations**

Fresh cow rations should be intermediate between the close-up and the high group rations. Cows should be fed ad libitum – that means a 5 to 10% feed refusal. If concentration of energy

and protein are somewhat low in the ration fed right after calving, it is important not to leave the cows in this group for too long of a time.

Rations should have at least 21% neutral detergent fiber (NDF) from forage and enough particle size to support good chewing activity and rumen fill. Shaver recommends diets have 8 to 10% of particles on the top screen of the Penn State Particle Size Separator for both prefresh and fresh cows. Hutjens suggests feeding 3 to 5 lb of high quality long forage to maintain rumen function.

Forage quality is very important in the transition period. High digestibility forages allow for increased intake and provide more energy in the ration. Satter and co-workers at the Dairy Forage Research Center observed an increase in milk yield of 4.5 lb per cow per day during the first four weeks of lactation when they were fed a brown midrib (BMR) corn silage compared to conventional silage. BMR silage has greater NDF digestibility than conventional silage. Cows were also fed the two silages 3 weeks before calving.

Recommended concentration of crude protein is 17 to 18% of the ration DM with 10.5% rumen degradable protein. Try to use a palatable source of bypass protein. It is important not to reduce feed intake. This might be a time to use rumen-protected amino acids, such as lysine and/or methionine. Goff warns that excess protein is counterproductive as it takes energy to eliminate the excess nitrogen in the form of urea. Synthesis of urea means that some glucose will be used for that purpose instead of being used for milk production.

As for the close-up group, it is important to feed adequate levels of copper, zinc, manganese, selenium and vitamin E. Horst suggests 2000 IU of vitamin E per day for fresh cows.

Water should always be available, clean and easily accessible. Water is the single most important nutrient. Waterer space should be a minimum of 3 inches per cow.

Nutrition is certainly important for the success of a transition cow program, but management is equally important.

### **Feeding Management Considerations**

Feed bunk management is especially important for fresh cows and a risk factor for laminitis and displaced abomasums. How transition cows are fed is probably as important as what they are fed. Early fresh cows should have adequate feed bunk space (minimum of 2 linear ft per cow) and stall space. We should not crowd this group!

Forages should be analyzed for nutrient content. Use of table values is not recommended. Sampling of forages needs to result in a representative material of the forage that is going to be fed. Minerals should be analyzed by wet chemistry methods and not NIR.

Adequate ration particle size provides enough effective fiber to promote chewing and rumination. Sorting in the feed bunk should be avoided. Shaver suggests that an on-farm evaluation of sorting should include particle size determination of the TMR and refusals. Sorting can be caused by high ration dry matter, particle size of the forages, cobs in the silage, amount and quality of hay added to the ration, how often cows are fed, bunk space and time available to eat the ration (Shaver).

Properly mixing the ration is crucial to the success of the dairy operation. Any scale errors should be fixed and the person feeding the cows should be properly trained on ration mixing and delivery.

### **Cow Comfort and Environmental Stress**

Cows are physiologically at the most stressful time of their lives during the transition period. They do not need any extra stressors such as, crowded stalls, not enough feed bunk space, competition from bossy cows, not enough waterer space, poor walking surfaces, small stalls, poor bedding, poor ventilation.

Overcrowding is common on most freestall barns. Greenough, a veterinarian from the University of Saskatchewan, Canada, suggests that there be 25% more stalls available than there are cows. Fresh cows need to have their space. Comfort of stalls should be maximized. Cows will lie as many as 14 hours in the most comfortable stalls. The minimum amount of time spent lying or resting should be 10 hours per day (Grant and Albright).

Surfaces should not be slippery. It is necessary to roughen smooth concrete or add grooves on a quadrilateral pattern. Manure should not accumulate on walking surfaces. It can reduce sure footing and contribute to lameness by softening the claw.

Grouping of transition cows can affect feeding behavior and incidence of metabolic disorders. Heifers can benefit from separate grouping because of their smaller size and lower position in the pecking order.

The effect of many stressors affecting the cow at the same time is additive. Stress takes energy from the body and can predispose the cow to developing diseases.

### **Take-home Message**

For a successful transition cow program, attention should be given to proper formulation of rations to avoid metabolic problems and get cows to a good start. It is also important to have proper feeding management and grouping strategies. Last, but not least, cow comfort and reduction of environment stressors are critical during the transition period.

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## **NOTES**

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