



# Dairy Briefs

The Latest Information  
on Dairy Cattle Nutrition



## Feeding Dry Cows

By Pedro Nogueira

Dry Cow nutrition has changed from a more or less neglected subject to a hot topic in dairy nutrition. It is now accepted that dry cow's nutrition plays a very important role on cow's health and productivity, and on the overall profitability of the dairy farm. On the other hand, the amount of research on this phase of production has resulted in an array of different dietary recommendations.

We've come from feeding a simple one group dry cow diet, to having two dry cow diets (far-off diet and a close-up), low energy-high fibre diets, low potassium and low calcium, complete or partial anionic diets and moderate energy diets throughout all the dry period. Along with these different nutritional strategies, there is a complete catalogue of different feed additives aimed to improve dairy cow transition and also a lot of research studies on dry cow behaviour and ways to improve comfort and reduce stress during this phase of production. With all this we often wonder which way to go!

In every one of these different strategies, additives and management recommendations are normally backed up by very good and sound research, with different herds using different strategies reporting substantial improvements on their situation when trying any particular feeding/additive/management option. The question is: why do certain diets work well on one dairy but not another? Why can't we, with all the research and current knowledge about the metabolism of transition cows, seem to be able to find the perfect one-diet-fits-all solution, able to solve most of the health problems related to the transition phase? I would say that probably it is a combination of different aspects, nutrition, management, facilities, and also fresh cow management, which makes for successful transition programs.



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Inside this Issue...

*Feeding Dry Cows*

**By: Pedro Nogueira**

## GREAT NEWS!

***Kenpal received 98.8%  
on our HACCP  
audit this year!***

***Kenpal's staff have  
continued to work hard  
on behalf of our valued  
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they receive the best  
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quality control program.***

***Special thanks go out to  
our HACCP team:***

***Jarrett Palen,  
Bill Wuerth, Harry Towle  
and Jason Becker***

**Keep up the good work!**



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It's becoming more common to see farms adopting dry cow diets based on low energy, high fibre, with a substantial amount of straw in the diet. The idea behind these diets is that far-off dry cows, because they are not milking, have very low energy requirements. If we feed them normal diets based on corn silage and haylage, we always end up overfeeding energy to these animals, especially during the far-off dry period. The reason is that research shows us that dry cows do a poor job of regulating energy intake. In fact several studies show that dry cows will consume 40-80% more energy than required during both far-off and close-up periods. Prolonged consumption of energy in excess of that required during the dry period can result in reduced postpartum success due to increased incidence of metabolic and health related disorders.

In response to this observation, feeding programs formulated on low energy diets (around 1.30 to 1.35 Mcal/kg DM) started to be tested, with improved postpartum production and health. It is thought that by feeding high fibre diets, cows will be able to eat free choice without greatly exceeding energy requirements. High straw diets should force dry cows to stop eating due to rumen fill before they greatly exceed their requirement for energy intake. It's interesting that, at least since 1989 the publication Nutrient Requirements of Dairy Cattle

(National Research Council) recommends dry cow diets with very low energy levels (around 1.25 Mcal/kg of DM), but it seems that only recently there is an increased interest in following those recommendations.

So, does this mean that we finally have the perfect dry cow diet? Probably not. Although several studies and practical on-farm examples show a positive response to this type of diet, there are also some farms where it doesn't work so well. Type and quality of straw are important, and also its length, to avoid sorting. Also these diets "force" the cows to spend more time eating, due to their lower energy. If the barn is not up to par in terms of comfort and feed bunk space, we can end up with more feet problems due to the extra time spent eating.

In my opinion a very positive aspect of these low/moderate energy diets is that we can feed them throughout the whole dry period, with or without some top dress supplementation on the last 3 weeks before calving. This makes it much easier for the majority of farms in Canada. According to 2008 DHI data, in Canada 83.4% of the farms had less than 100 cows. This number of animals per farm makes it difficult to prepare two TMR's (far-off and close-up), because normally there is not enough close-up cows to do a proper close-up TMR. In practice, farms normally end up mixing a close-up diet for 2 days, which is not the best solution, at least



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during summer. I think the above mentioned diets can provide a good compromise between science and practicality.

And what about someone who does not have access to straw or thinks that straw is just for bedding? Fortunately there are also several examples of very successful transition programs without the use of straw. In fact, on the January 2008 issue of the magazine Dairy Herd management, there was an article which title is self explanatory "Straw-free diets work, too". In this article there were 2 testimonies of 2 farms that adopted dry cow feeding programs without straw. Diets were based on corn silage, haylage and grass hay, some grain mix and minerals. Both of these farms reported

that cows responded very positively to the new diets, holding onto intakes around calving and freshening with significantly less health problems. The interesting thing in this article is that both these farms had only one group dry cow diet (no close-up) and the reported energy of both diets was much higher than what is recommended now for the straw-based low energy diets. These farms diets were 1.54 MCal/kg DM and 1.65 Mcal/kg DM. How come such high energy diets, fed for 60 days in both cases, yield such good results?

Again, this evidence only tells us that nutrition is not everything on transition programs. In fact, researchers from the University of Wisconsin refer that over the past 17 years of herd investigations by their clinical service, the complex of ketosis, fatty liver, and displaced abomasum has emerged as the most frequently investigated herd problem, and cow behaviour and social factors have emerged as the primary risk factors in these herds. According to them, "where poorly formulated rations and inaccurate delivery systems were once the primary risk factors, we increasingly see poorly staged pen moves and overstocking as the key risk factors in our industry today. We hypothesize that the mechanism is disruption of dry matter intake for vulnerable cows, leading to ketosis or hepatic lipidosis followed by the cascade of related diseases, and resulting in high turnover rates in early lactation cows."

Confused with what to do regarding your dry cow program? Well, at least, there are some recommendations that most nutritionists and veterinarians seem to agree on. Dr. Rick Lundquist summarizes them: avoid fat dry cows. Whatever dietary strategy you use to keep cows in shape in late lactation and during the dry period, transitioning fat dry cows is a challenge. Second, reduce potassium as much as possible in pre-fresh diets (< 1.3% if possible). Third, feed adequate magnesium.

In the end, each farm has to develop their own strategy, adapted to their own animals, facilities, feeds and management ability. Fat cows will have to have a different dry cow program than thinner cows. Farms with high potassium forages probably would benefit from the use of anionic salts, while farms with low potassium forages would probably do okay without them. Farms that adopt shorter dry periods normally do well with just one group dry cow diet, while longer dry cow periods may require a far-off and a close-up diet. Good forages, good minerals and vitamins and lots of comfort should always be a given on any transition program.

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# KENPAL DRY COW MINERAL PROGRAM



Kenpal has developed a line of products for dry cows based on different feeding systems we find on farms. All products in this line are available either as a Vitamin/Mineral Supplement or as a Complete Ration. Kenpal offers the following products:

**TWO GROUP DRY COW DIETS:** these products are designed for farms that have two dry cow diets: far-off and close-up.

1) **FAR-OFF PERIOD:** these products will supply optimum levels of vitamins and trace minerals needed for today's cows in this phase of production. It's especially important to provide an adequate ratio between calcium and phosphorus, along with a good quantity of magnesium.

**Feeding Rate:**

- o Vitamin/Mineral Supplement: 0.125 kg/head/day (125 grams/head/day)
- o Complete Ration: 1.7 kg/head/day

2) **CLOSE-UP PERIOD:** nutrient requirements are higher for this period. The calf is growing fast and the cow is producing colostrum, which is very rich in nutrients. Kenpal products for this period have increased vitamins to support the immune system, and also some special additives to help prepare the rumen for the increased quantities of grain. Products for this period have the following formulation options:

**Close-Up Plain:**

- High Vitamin E - Optimum levels of Vitamin E may reduce incidence of retained placenta.
- Yeast Culture - Feeding yeast culture prior to calving may help maintain dry matter intake.
- Niacin - Niacin may help to prevent ketosis.

**Feeding Rate:**

- o Vitamin/Mineral Supplement: 0.225 kg/head/day (225 grams/head/day)
- o Complete Ration: 4.5 kg/head/day

**Close-Up with By-Pass:** a package of high quality by-pass protein sources is added to the plain formulation;

**Feeding Rate:**

- o Vitamin/Mineral Supplement: 0.350 kg/head/day (350 grams/head/day)
- o Complete Ration: 4.6 kg/head/day

**Close-Up with Anionic Salts:** farms experiencing fresh cow problems, like milk fever and related problems, may benefit from the inclusion of Anionic Salts to the diets. Anionic salts products should only be fed during the close-up period.

**Feeding Rate:**

- o Vitamin/Mineral Supplement: 0.800 kg/head/day (800 grams/head/day)
- o Complete Ration: 4.5 kg/head/day

**ONE GROUP DRY COW DIET:** farms that have shorter dry periods may have just one dry cow diet. When cows are dry for a shorter time, it may be a negative to have a far-off and a close-up diet.

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The rumen environment may not have enough time to adapt to all the dietary changes. In these cases just one diet seems to work better. Kenpal recommends the use of the close-up products for this type of program.

**ONE GROUP DRY COW DIET WITH AN ADD-ON OR A TOP-DRESS FOR THE LAST 3 WEEKS OF GESTATION:** There is increasing interest in this type of system. The idea is to have the same TMR fed to all dry cows, and then, three weeks before calving, top-dress that base TMR with some extra nutrients. The main advantage is that even smaller farms can do a proper TMR because they will be mixing feed for a larger number of cows than if they had to do two separate TMR's. The close up cows will have to be physically separated from the far-off, but they eat the same TMR. Farms normally do one of two options:

**OPTION 1:** The base TMR is prepared and distributed to the far-off dry cows. Then the TMR is stopped and some extra feeds are added to it (for example corn, soybean meal and minerals and/or special additives) and this final TMR is distributed to the close-up cows.

**OPTION 2:** Another option is to distribute the base TMR to all the cows, close-up included, and then top-dress the close-up cows with a special close-up complete ration, including the grains, proteins, minerals, etc.

### **Here are some Management Tips for a successful dry cow period:**

#### **Far-Off Dry Cows**

1. Watch calcium and potassium intake. Over-feeding of calcium and potassium can cause milk fever. **KENPAL FAR OFF DAIRY DRY COW PRODUCTS** are low in calcium. Legume hays and haylages high in calcium and potassium should not be fed to dry cows, or fed in very small quantities.
2. Avoid feeding too much grain during the early dry period. Excessively fat cows tend to be ketotic when they freshen.
3. Incorporate hay or straw into the ration. Feed a minimum of 3 to 5 kg (7 to 11 lbs) per cow per day of grass hay to restore rumen health. Alternatively straw can also be fed to help reduce the energy level of the dry cow diet and promote rumen fill. Either hay and/or straw should be chopped to avoid sorting.

#### **Close-up Dry Cow**

1. Maintain proper body condition. Over-conditioned cows have a larger drop in intake around calving and are more prone to metabolic disorders. Never let cows lose condition during the dry period — this may lead to fatty liver and metabolic disorders.
2. Split dry cows into far-off and close-up groups. As cows get close to calving, dry matter intake declines, at the same time nutrient requirements for the developing calf, colostrum and mammary tissue synthesis are increasing. In addition, cows need to be adapted from the higher forage far-off dry cow ration to the higher grain lactation ration. All these changes necessitate the formulation of a higher nutrient density ration for close-up dry cows.
3. Maintain a clean, comfortable, minimum-stress environment. The period around calving is the most stressful in the cow's life. The animal's immune system is already challenged by physiological events. If environmental stress is added on top of this, disease problems may occur.
4. Provide adequate, fresh clean water. Pregnancy increases the cow's water requirement by 35 to 50%. Inadequate water supplies (quantity or quality) may decrease feed consumption.
5. Encourage dry matter intake by using high quality feeds and keeping these feeds fresh. This is especially critical for close-up cows and extremely critical for the last 5 days prior to calving. Do not let close-up dry cows run out of feed, especially around calving.

The Dry Cow Period is considered by many people involved in the dairy industry as the most important period of the cow's life. Several metabolic problems which affect fresh cows have their roots in the dry period. There are several areas to address for a successful transition period. Good management, facilities and comfort are very important components. On top of these, top nutrition, with adequate minerals and vitamins, can make a difference on how well the cows will do. Kenpal can provide you with high quality diets and a diversified range of products to fit the needs of your particular situation.