University of California Cooperative Extension • Fresno/Madera County

California Dairy Newsletter

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Is Dairy Production Today More Environmentally Friendly than 50 Years Ago?

Jennifer Heguy, UCCE Stanislaus/San Joaquin Counties

The short answer is yes. A 2009 Cornell University study compared environmental impacts of historical production practices with those of modern day dairying. In 1944, dairies were low-input, pasture based systems. Dairy animals were predominantly small-breed, and most, if not all breeding was accomplished through natural service. In sharp contrast, the dairy industry in 2007 is characterized by large breed animals, high-input, TMR based feeding systems. Approximately 70% of breeding is done through AI, allowing for greater genetic improvement.

While many opponents of modern dairying look at the environmental impacts on a per cow basis, this way of thinking does not accurately represent the differences. Low input systems will yield low outputs, both milk production and waste. A high yielding animal will undoubtedly require higher inputs and subsequently create more waste. Therefore, dairy production systems should not be compared on an animal basis, but rather on unit of milk production. Efficiency is the key!

The number of animals and milk production of the two representative years is presented in Table 1. In 2007, there were 16.4 million less dairy animals producing 68.6 billion more pounds (lbs) of milk than in 1944. Clearly, genetics and the way we feed and treat our animals are reflected in the more than four-fold increase in yield per cow.

Table 1. Comparison of cow number and milk production in 1944 vs. 2007.

	1944	2007
# of cows (millions)	25.6	9.2
Milk production (billion lbs)	116.6	185.2
Yield per Cow (lbs/year)	4,563	20,225

To produce one billion pounds of milk, today's dairy industry requires a fraction of the inputs needed in 1944. Further, waste outputs per billion pounds of milk are reduced in the 2007 model.

Dairying today requires:
- 21% of the animals
- 23% of feedstuffs
- 35% of water and
- 10% of the land

Dairying today produces only:
- 24% of the manure
- 43% of CH_4 and
- 56% of N_2O

Today's dairy farmers are more efficient at producing a high-quality, wholesome product to an ever growing number of consumers.

Reference: Capper, J.L., et al. The Environmental Impact of Dairy Production: 1944 compared with 2007. Journal of Animal Science 2009. 87:2160-2167.

Trouble Shooting High Laboratory Pasteurization Count

Noelia Silva-del-Rio & Carol Collar, UCCE Tulare & Kings Counties

High Laboratory Pasteurization Count (LPC) values indicate bacteria resistance to high temperature (thermoduric) present in bulk tank milk. These bacteria survive pasteurization and decrease milk shelf life. Thermoduric bacteria are found in soil and manure. They reach the milk through dirty udders and can grow rapidly in the milking equipment either during long milking shifts or when the milking equipment is not properly cleaned. If you have high LPC, it may be worth your time to check the following areas:

1. Temperature, chemical concentration, and duration of the wash cycles

Follow the chemical label recommendations and check:

a) Water temperature at the wash sink (use a thermometer).

Remember: Temperatures above or below the recommended range may have a negative effect on your wash system.

b) Alkalinity or acidity of the washing solutions (use pH strips: 1-14 pH).

c) Timing of the different cleaning cycles (use a stop watch). Your equipment manufacturer will provide the calculated water volume and length of your washing cycles.

Remember: The concentration of cleaning chemicals should be adjusted according to water hardness. Make sure your water is not contaminated with bacteria.

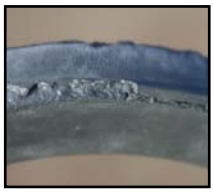
Recommended Guidelines:
Pre-Wash Rinse: Temp: 100-120°F, Time: until discharge is clear
Detergent Wash: Temp: 140-165°F (never below 120 °F); pH: 11-13; Time: 10 min.
Acid Rinse: Temp: 90-110°F (some chemicals cold); pH: <4

2. Sanitation and wear of liners, milk hoses, jetters and gaskets

Replace those as often as recommended. Check the pieces that you are replacing for wear and sanitation. If you see cracks or wrinkles you need to replace those sooner!!

Remember:

1) Cracks can harbor bacteria.
2) High concentration of cleaning chemicals increases wear of rubber parts.



3. Drainage

The pipeline should be properly sloped with the appropriate secondary drains. Check for pipes, hoses, fittings and equipment that do not drain when the system is shut off.

4. Duration of milking shifts

Thermoduric bacteria grow exponentially on in-line filters if milkings last more than 4 hrs, change out filters as appropriate if your milking time exceeds this.

5. Air injectors

Air injectors should be placed properly for a good "scrubbing" action and they should be maintained clean. Signs related to air injector problems:

1) The water level in the receiver does not change during cleaning.
2) The milk pump never shuts off.
3) The ball valve in the sanitary trap shuts off the vacuum.
4) There are large volumes of water in the distribution tank.
5) Air is entering the system at the wash tank.

Remember: Air can carry bacteria from the environment to the milk equipment surfaces. It is important to maintain the cleanliness of your air lines and the sanitary trap.

6. Other problems

1) Pipe bends and pipe dead ends that are difficult to clean.
2) Small components that are tough to reach (milk meters, take off sensors…)
3) Milk level in the reciever can raise up on occasion and leave a milk film. Hours may pass before it is cleaned!!

Recommemded Reading: Common Reasons for Elevated LPC. Larry Collar. CDI Quality Corner, Nov. 2007. Troubleshooting high bacteria counts in farm milk. DJ Reinemann, GA Mein, DR Bray, D Reid, JS Britt. http://learningstore.uwex.edu/Troubleshooting-High-Bacteria-Counts-in-Farm-Milk-P66C10.aspx

Buying or Selling Wet Forages

Gerald Higginbotham, UCCE Fresno/Madera Counties

If you are currently purchasing corn silage for your dairy, you should consider buying (or selling) forages on the basis of their moisture or dry matter (DM) content. Typically, 30% DM is used for corn and cereal silage and 35% DM is used for alfalfa silage. These figures are used as standard because they represent the optimum dry matter content for making quality silage. As an example, let us say you agree to pay $40/ton for corn silage on a 30% DM basis.

Case 1: The corn silage field actually averaged 27% DM. Then you would pay: 27/30 x 40/ton = .9 x 40 = $36.00/ton. You pay less per ton because you are getting less dry matter per ton than you would have at 30% DM.

Case 2: The corn silage field averaged 33% DM. Then you would pay: 33/30 x 40/ton = 1.1 x $40/ton = $44.00/ton. This time you pay a bit more per ton because you are getting more dry matter per ton than you would at 30% DM.

Buying forages based on the actual dry matter content can alleviate any disagreements that may come about due to forages being too wet or too dry.

Controlling Dietary Mineral Content in Lactating Dairy Animals May Reduce Feed Costs and Manure Production

Alejandro R. Castillo, UCCE Merced County

Minerals are essential in dairy cow diets for normal lactation performance (milk yield, animal health, and reproduction). But, animal mineral requirements are variable and depend on the animal's productivity. Also, concentration of minerals in forages and concentrate feeds are variable, and not all the minerals in the diet are available for absorption. Mineral absorption coefficients can be very low, variable, and for some feeds are not very well known. Moreover, interactions between dietary minerals in excess or deficit may affect the minerals' absorption coefficients. The only solution to minimize and control this situation is to analyze feed mineral content and drinking water mineral composition, and use this information to supply minerals strictly according to the animal's requirements. There are two main reasons to control mineral content in lactating dairy diets in California: economical and regulatory.

Excessive mineral intake wastes money and in many cases affects the animals' productivity. For example, excess salts in the diet may affect rumen osmolarity and rumen dilution rate. High osmotic pressure in the rumen was associated with cessation of rumination and increased rate of passage. For high-yielding dairy animals fed highly concentrated diets, a reduction in rumination rates and rumen retention times may reduce rumen fiber fermentation and milk fat content, and increase both subclinical acidosis and laminitis problems.

From the regulatory point of view, the Mineral Tolerance of Animals (NRC, 2005) identified 10 minerals that could be of concern because of their potential effects on crop yields or the environment: cadmium, copper, iron, mercury, phosphorus, potassium, sodium, selenium, sulfur, and zinc. In California, dairy producers are preparing waste management plans and nutrient management plans where nitrogen is currently the primary concern. In the near future, the minerals indicated previously might be considered.

It is recommended to make a mineral content database of the feeds utilized on each dairy, including the drinking water. This database will allow each dairy to formulate diets according to the animals' mineral requirements. This will improve production efficiency, reduce feed cost, reduce mineral excretion, and help farms comply with environmental regulations.

Farm Family Stress and Depression

Carol Collar, UCCE Kings County

The following article is a summary of information presented by Dr. Robert Fetsch, a professor at Colorado State University. The presentation was made at the Western Dairy Management Conference last March. You can read Dr. Fetsch's entire paper in the proceedings at http://www.wdmc.org/proceed.htm

Financial and emotional stress levels are high everywhere, but nowhere greater than among dairy and farm families. Studies have shown that farming is one of the top high stress occupations based on the incidence of stress related diseases (heart disease, high blood pressure, ulcers and depression). Economic and market conditions change regularly. The weather is unpredictable. Lack of control over what you pay for inputs and what you receive for outputs can make you feel powerless and lead to high stress levels.

Extensive research has found higher suicide rates among farmers and ranchers than among the general public. In the US, suicide rates for rural men are twice that of their urban counter parts, and the rate is increasing over time. It is important during these tough times to look out for one another. Be alert for signs of stress in your friends, neighbors, your family or even yourself. For example, there may be changes in routines, or an increase in illness. The appearance of the farmstead and care of livestock may decline. There could be an increase in farm accidents or farm children may show signs of stress. Watch for the following signs of chronic, prolonged stress:

- Physical – headaches, ulcers, backaches, eating irregularities, sleep disturbances, frequent sickness, exhaustion
- Emotional – sadness, depression, bitterness, anger, anxiety, loss of spirit or humor
- Behavioral – irritability, acting out, withdrawal, passive-aggressiveness, alcoholism, violence
- Cognitive – memory loss, lack of concentration, inability to make decisions
- Self esteem – feelings like "I'm a failure" or "I blew it…"

The greater number of signs or symptoms, the greater your concern should be. If someone you know is exhibiting the following signs, connect them with professional help:

Depression - sad face, slow movements, unkempt look, feeling hopeless, discouraged, listless, negative thoughts, reduced pleasure in usual activities, people problems, physical problems, guilt and low self esteem ("it's all my fault…").

Suicidal intent – severe, intense feelings of anxiety or depression, withdrawn, alone, lack of friends and supports, sense of complete powerlessness, hopeless feelings, alcohol abuse, frequent or constant thoughts with a specific plan in mind, and cries for help including making a will, giving possessions away, or making statements like "maybe my family would be better off without me".

The first step in helping someone is recognizing signs. But what should you do next? Try to connect with the person you are concerned about. Tell them gently that you are worried about them, ask them to tell you about how things are going, then give them your time and attention and *be a good listener*. Do not judge. Do not tell them to "just tough it out". Respond to them with respect, honesty and sincerity. Let them know that it is OK to admit they are having problems and to seek help.

Find out about resources. This website is a helpful resource for locating professional help locally or anywhere in the US: http://www.therapistlocator.net/. All cries for help (certain statements that may indicate a person is considering suicide, but has not decided for sure) should be taken seriously. If you recognize suicidal thinking, call 1-800-SUICIDE for help.

If You Want to Improve Cow Comfort, Increase Bedding Depth

Cassandra Tucker, UC Davis

Cow comfort is a top priority and in the last 10 years, research in this area has started to use cow behavior to tell us more about what cows want.

In a recent study we found that increasing cow comfort can be as simple as increasing the depth of bedding in your stalls.

Three experiments evaluated the effects of different bedding materials on mattresses. Experiment 1 used four levels of shavings ranging from 6.6 to 52.9 pounds per stall. Experiment 2 used four different levels of straw ranging from 2.2 to 15.4 pounds per stall, while Experiment 3 used four low levels of straw from 1.1 to 6.6 pounds per stall. In each experiment the total lying time, number of times the cow lay down, and the length of each lying bout were recorded with data loggers.

Our results were published in the June issue of the Journal of Dairy Science and showed that cows were more comfortable with stalls that had more bedding. Experiment 1 showed an increase of three minutes lying time for every additional 2.2 pounds of shavings. Experiment 2 showed an increase of 12 minutes for every additional 2.2 pounds shavings. In contrast, Experiment 3 showed no change between the lower levels of straw bedding, indicating that it takes a reasonable amount of bedding to cushion cows.

This pattern of more bedding resulting in improved comfort is likely true for all bedding materials, including sand and manure solids. When lying down, cows place a lot of their body weight on their knees. Providing well-bedded stalls cushions the knees during this behavior and makes cows more likely to lie down. Keeping your stalls covered with an adequate amount of bedding also reduces hock lesions. To maintain normal lying times (between 8 and 16 hours/day) and prevent injuries, provide cows with well-bedded stalls.

Looking at Your Dairy from an Outside Perspective

Jennifer Heguy, UCCE Stanislaus/San Joaquin Counties

I recently received a phone call from a concerned citizen regarding mortalities on dairies. This person drives a heavily traveled road to work, and reported frequently seeing dead cattle lying on the side of the road near a dairy. He didn't understand why dairy farmers would let their animals die, and wanted to know if this was a common practice. I assured him that animal well-being is a top priority of producers, and it is not in anyone's best interest to simply allow animals to die. After hanging up the phone, I immediately started to think how this situation could be remedied. Mortalities on dairies can be minimized, but even the best run dairies will have the occasional mortality. In the January issue of the California Dairy Newsletter, we discussed a "carcass shack" that had a number of uses, one being concealing mortalities. While this might be ideal, there is probably not a lot of extra money lying around to start building these types of structures. Because of biosecurity reasons we don't want rendering trucks driving onto the property, but having dead-stock lying on the side of the road (especially heavily commuted roads) is not great for PR. What about covering dead-stock with a tarp, or putting up a cheaply constructed barrier to conceal dead-stock from traffic? Public perception of the dairy industry is at a critical point, and it's important to maintain good standing with consumers.

Calf Feeding Notes

Betsy Karle, UCCE Glenn/Tehama Counties

As the real heat of summer approaches, we take the opportunity to review the needs of our dairies' future - heifer calves. It's no secret that getting 2-3 quarts of colostrum into the calf as soon as possible after birth and another 2-3 quarts into her within 24 hours is absolutely essential to her health and well-being. During this first day, the calf can absorb maternal antibodies in colostrum directly from the gut without digesting them (passive immunity). This is especially important for cattle, as these antibodies do not cross directly from the dam to the calf through the placental wall during gestation. To ensure the highest quality colostrum, dams should be well vaccinated per a veterinarian's recommendations during the dry period. Without this protection, the colostrum will be of inferior quality. The calf will absorb whatever it ingests first, including bacteria and other pathogens. These will be absorbed into the blood stream so it is well advised to be very sanitary when milking the dam and administering the colostrum to avoid any contamination.

The calf's own immunity does not kick in until 2-3 weeks of age and is not fully developed until she is 6-8 months old, making the first few weeks of life high risk. Summer heat increases the calf's stress level, so it is especially important to follow strict cleanliness protocols to reduce the pathogen load that the calf receives. This includes removing the calf from the dam & calving area as soon as possible and placing her in a clean, dry, and well-ventilated pen. Pens should be cleaned and disinfected after each calf and the entire calf housing area should be rotated if space and pen design permits. This reduces the pathogen load in a particular area, thereby reducing the amount of calf exposure. Sunlight is a great sanitizer, so simply allowing pens or hutches to dry for many days in the sun before being used by another calf is a great start.

Inevitably, calves will scour at some point. This can be caused by a pathogen or by feed changes. Nutritional scours can be avoided by making any feed changes gradually and carefully following label instructions on milk replacers. Especially in the summertime, any excess fluid loss from nutritional scours should be prevented. Scours as the result of pathogens are much more difficult to prevent. Clean environment, good air flow and adequate shade are essential and calf vaccination programs may provide some protection. Electrolyte solutions designed for calf use can be fed when a calf has diarrhea, but it is vital to keep offering the calf her normal ration of milk or replacer. Withholding milk will not make a disease pass more quickly and will contribute to dehydration and malnourishment due to energy starvation. Electrolytes should be fed in separate meals and not mixed with milk replacer powder. A calf should always have access to clean water from 3 days of age and it is advisable to check the quality of the water that is being offered. Oftentimes, high salt concentrations will discourage consumption and high bacteria concentrations can cause additional health problems. Feeding additional water or electrolytes to all calves between milk feedings via bottle on hot days will also help combat heat stress.

While the triple digits make the job more difficult, calves can still prosper given the right environment and nutrition. It is worth it to the future of your dairy to ensure that these replacements are given the best start possible.

References & more information: Dairy Care Practices, University of California Cooperative Extension Dairy Workgroup. Heinrichs, A.J. & C.M. Jones. 2003. Feeding the Newborn Dairy Calf. Penn State Cooperative Extension Publication. Hoffman, P.C. & R. Plourd. 2003. Raising Dairy Replacements. Cooperative Extension-Univ. of Wisc., Univ. of Minn., Iowa St. Univ., Univ. of Ill.

Nutrient Management on a Dairy - Why Do I Need To Be a Good Irrigation Water Manager?

Larry Schwankl, UCCE Irrigation Specialist, Carol Frate, UCCE Tulare Forage Advisor,
Deanne Meyer, UCCE Livestock Waste Management Specialist

Nutrient management deals with the nutrients applied to a crop, so why are irrigation practices of concern?

First, liquid manures are most often applied to crops through the irrigation system. As part of nutrient management, you must quantify and control the amount of both fresh and manure water that you apply to a field in order to determine the amount of nutrients applied. The General Order for Existing Milk Cow Dairies (GO) for dairies in the Central Valley Regional Water Quality Control Board jurisdiction requires that application of nitrogen to land where dairy operators apply manure not exceed 140% of the nitrogen removed in the crop(s). It is essential to know how much fresh water and manure water you are applying in order to meet this requirement and achieve reasonable crop yields.

Second, good irrigation water management is important in keeping the nitrogen from solid or liquid manures, fertilizers, or crop residues in the crop's root zone. Crops take up water and nutrients from their root zone. Rooting depth and the actual amount of water and nutrient taken up by crops will vary by growth stage of the crop. Water and nutrients in soil below the rooting depth are not available to plants. Irrigations replenish the water in the root zone removed by the crop. If we apply more water than there is storage space in the crop's root zone, excess water drains out the bottom of the root zone. The excess water is referred to as drainage water or deep percolation. The nitrate form of nitrogen moves readily with water. When nitrate is present in the root zone and drainage occurs, the nitrate will be carried or "leached" below the root zone. It is then no longer available as fertilizer for the crop and may be on its way to being an environmental concern.

Some of the record keeping required for the General Order will provide you with site specific information for your fields to assist you in identifying if and where you may be having deep percolation. Use of documents provided at CDQAP WDR outreach meetings for producer Reference Binders can help you maintain and evaluate your farm data. These documents are also available at www.cdqa.org/wdr/binder.htm . Keeping detailed information on how much irrigation water and liquid manure are applied at each and every irrigation will be very helpful (Reference Binder Tab 6 documents 13 and 14). Numerous ways of collecting the field application data exist. These forms merely represent one way of collecting required information. Identification of total water required by the crop (Tab 11 document 6) and information on how much water was applied can be used to determine if water and nitrate are leaching from fields (Tab 11 document 5). Leaching of nitrates can result in your crop being under-fertilized with subsequent reduced yields, and in you not meeting the General Order's nitrogen application target.

Dairy Cattle Reproductive Short Course – September 17, 2009 – Fresno, CA

Organizer: California State University, Fresno & University of California Cooperative Extension
Where: Fresno State University in the Center for Irrigation Technology Conference Room (CATI); Corner of Chestnut and Barstow.
When: September 17, 2009, 9:00 am.
Topics: Review of reproductive hormones, synchronization protocols, abortion disease and diagnosis, treatment of reproductive problems, a reproductive program for fresh cows, and a review of A.I. techniques using live cows.
Cost: $80.00
Language: English & simultaneous translation to Spanish
For more information and to register on-line and pay by credit card go to: 2Hhttp://ucanr.org/reproductivemeeting
You may also contact Dr. Gerald Higginbotham, University of California Cooperative Extension Dairy Advisor for Fresno/Madera Counties at 559-456-7558 for more information and to request registration materials by mail.

Good Samples Lead to Quality Data: Water Quality Compliance in the Central Valley

Deanne Meyer, Livestock Waste Management Specialist and Trish Price, Staff Research Associate
Department of Animal Science, University of California, Davis

There are numerous steps that need to occur in order to obtain useful lab results. Sampling protocols describe how samples are collected, handled, stored, and delivered to the appropriate laboratory for analysis. The General Order for Existing Milk Cow Dairies identifies that sampling protocols must be approved by the Executive Officer for those samples taken for nutrient management (solid manure, process wastewater, soil, plant tissue, and irrigation water). Once identified acceptable, the protocols are posted on the Regional Board's website. Your Sampling and Analysis Plan identifies the protocol(s) being used at your facility. It's important to understand the protocols and be sure that everyone collecting samples for your facility uses the correct protocol.

The first step in obtaining any sample is to be sure it is representative of the material being sampled. Be sure to review your sampling protocols before collecting samples to assure that the samples will represent the material you need to analyze and will be collected and stored appropriately. Wet materials (especially chopped forage or solid manure) have moisture in the samples. All of the nutrient calculations are based on the moisture content of the material, so taking a good sample that represents the average moisture content of the material applied or harvested is critical for useful information.

The chain of custody form is the documentation of the entire life of the sample. At a minimum, this includes identification of the sample, the name(s) of every person who has responsibility or custody of the sample, the time and date when the sample is collected, changes hands, is stored or preserved and delivered to the laboratory. Incomplete chain of custody forms can lead to notice of violation from the Regional Board.

Some sampling protocols identify the maximum hold time and preservation method for samples. It is very important to understand if this hold time represents the time between collecting the sample and delivering to the analytical laboratory; or if this time is from sampling to actual analysis by the laboratory. Contact your analytical lab to determine how long they will need to hold the sample before beginning the analysis. At certain times of year, the hold time within the laboratory may outdate the sample and your data will be invalid. Preservation method in many protocols requires that samples be ice chilled. Keep in mind, when laboratories receive samples they often check sample temperature (or sample container temperature) and record this on your chain of custody form. You actually get a record of the final chain of custody form with your results. This form will document if your samples were properly preserved for analysis.

The dairy representative (producer, consultant) is responsible for fulfilling the requirements to obtain, preserve, store and deliver high quality samples to the laboratory for analysis. The job of the analytical laboratory is to analyze samples. The dairy representative is also responsible for selecting laboratories that use the correct analysis methods, are affiliated with the correct proficiency testing programs, and for directing the lab to perform the necessary analyses.

Labs analyzing solid or liquid manure must be participating in the Manure Analysis Proficiency Testing Program (http://www.mda.state.mn.us/licensing/pestfert/mapprogram.htm). A lab accredited in the Environmental Laboratory Accredition Program (ELAP) for Wastewater analyses may be used for process wastewater. Labs analyzing soil and plant tissue must be participating in the North American Proficiency Testing Program (NAPT) (http://www.naptprogram.org/pap/). Labs analyzing irrigation water must be accredited by ELAP (http://ww2.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx, scroll down to "Information, Lists, and Forms"). Once you get the samples to the analytical laboratory it is the lab's responsibility to analyze the samples correctly and report data back to you in a timely fashion.

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Are Your Dry Cows Undergoing Proper Transition at Calving?

Gerald Higginbotham, Ph.D., UCCE, Fresno/Madera Counties

The dry period is one of the most neglected aspects of dairy management. Ongoing research is continually showing that proper nutritional management during the time will pay dividends in the subsequent lactation. The dry period shouldn't be thought of as time for the cow to rest but rather a time when important metabolic changes are occurring. The calf inside the dry cow will complete almost 2/3 of its growth during the dry period and this growth will take priority over maintenance of the cows own body tissues. During these changes, the cow's body condition should remain fairly consistent. Slight gains in the body condition may be beneficial in cows that dry off to thin.

The transition period usually refers to the final two to three weeks prior to calving. Traditionally, this time has been used to gradually adapt to cows high in grain diets that are normally fed during early lactation. Without gradual adaptation to high grain diets, there is a risk of upsetting rumen fermentation and causing the cow to go off feed.

One mechanism by which nutrients are absorbed during digestion is finger-like projections in the rumen called papillae. These papillae gradually elongate as volatile fatty acids (VFA) production increases in the rumen. VFA's are products that are produced when the rumen bacteria digest fiber. The VFA's are then used an energy source by the animal.

Full elongation of the papillae from their shortened state (<0.2") on an all-forage diet to their longest state (0.5") on a high concentrate diet takes approximately six weeks.

Adaption of the papillae is probably more important to normal rumen functions in early lactation than is adaptation of rumen bacteria. Well-adapted papillae are necessary to prevent ruminal acidosis in early lactation. The longer the papillae, the greater their efficiency in absorbing VFA from the rumen fluid. If VFA are not rapidly removed from the rumen, they depress ruminal pH which leads to acidosis. This condition most noticeably results in cows off feed, butterfat depression and foot problems.

Maximizing feed intake around the time of calving also has shown to be beneficial. Research has shown that cows which avoid severe feed intake depression prior to calving have a favorable nutritional balance prior to and after calving. While those that go almost completely off feed experience an extended period of negative nutrient balance during the transition period. Maximizing feed intake prior to calving appears critical for the prevention of metabolic problems.

Numerous studies have indicated that overconditioned cows are more likely to have poor appetites post-freshening. Post-fresh feed intake is related to pre-fresh feed intake, therefore, one might hypothesized that over-conditioned cows would also consume less feed before freshening. Michigan State University researchers summarized feed intake during the dry period for 20 cows. The ten cows with the highest body condition score (>3.6;1=lean, 5= obese) consumed dry matter at approximately 1.5% of body weight and the ten cows with the lowest body condition score ($\leq$ 3.6) consumed dry matter at 2% of body weight. Overconditioned cows had a higher incidence of health problems within 75 days of post-freshening.

It seems that over the years we have slighted the dry cow in our feeding and management while concentrating on the lactating cow. We have come to realize that the way we handle the dry cow has a lot of influence on the metabolic and other problems at calving. Attention to the feeding program of the dry cow is worth the effort.

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