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What Motivates Your Dairy Employees?

Gerald Higginbotham, Fresno/Madera Dairy Advisor

In conversing with dairy managers, their usual complaint is their labor force. When these individuals are asked what motivates their employees to do a good job every day, the usual response is “They will be fired if they don’t perform well. That is motivation enough”. Their statements may be true, but is employee performance really improved with the threat of termination? Dairy employees already have the desire and capability to become top performers. The challenge for dairy managers is to create a workplace environment where employees can achieve their true potential and be motivated to do so. Motivated employees are needed more than ever in the dairy industry, especially in these difficult economic times.

Dairy managers may think they know what employees want for their happiness in the work place, but there is evidence to the contrary. Researchers at George Mason University did a study comparing what employees wanted, and what the employer thought the employees wanted. The results of how each group ranked the desires are presented in the table below. As shown from this study, money isn’t the sole criteria for which employees will perform well. Here are some possibilities to help motivate your employees to do the best job possible:

Be the example. The manager’s attitude can set the tone for the rest of the employees. Good managers consider their employees as part of the team and communicate with them on decisions that may affect them. It is important to listen to everyone’s opinions, and be receptive to their input. Employees are more motivated when they feel needed, appreciated, and valued.

Focus on employee happiness rather than employee motivation. Dairy employees work long hours and spend a considerable amount of time away from their families. They may miss important events that their children are participating in. Communicate with your workers to understand their family needs so accommodations can

Employee's Rank	Item	Employer's Rank
1	Interesting work	5
2	Appreciation of work	8
3	Feeling “in on things”	10
4	Job security	2
5	Good wages	1
6	Promotion/growth	3
7	Good working conditions	4
8	Personal loyalty	6
9	Tactful discipline	7
10	Sympathetic help with problems	9

be made for them to attend the more important family functions.

Let employees share in the dairy's success. Employee performance, productivity, and motivation can be associated with how well a worker feels part of the dairy team. Various employee incentives can be tied to milk production, reproduction, calf raising etc. These incentive programs can give the employee a sense that he/she is part of the team and rewarded as such.

Encourage your workers to voice complaints. Your workers are your eyes and ears of your operation. Let them convey if a certain practice is not providing the efficiencies your operation requires. Workers may feel that they will be retaliated against for complaining when they can actually be an asset if a certain management system needs be modified.

If you are currently facing high employee turnover rates, it might be time to re-assess your labor management program. Doing so may help to improve your employees' performance on your dairy, as well as their satisfaction with their job.

Understanding the Ensiling Process Can Help You Reach Your Silage Feeding Goals

Noelia Silva-del-Rio, Dairy Production Medicine Specialist and Jennifer Heguy, Stan/SJ Dairy Advisor

At this point in the season, you've finished ensiling your winter cereal crop and corn is being planted. With high feed costs, now is the time to evaluate your current ensiling techniques in order to make improvements to the process before corn starts coming off the field in summer. To do this, let's take a look at the different phases of the ensiling process, what pit-falls exist, and what steps you can take to reach your silage feeding goals.

Phase 1 – Initial Aerobic Phase. Oxygen is entrapped within the fresh forage delivered to the silage structure and this oxygen maintains the respiration of plants and microorganisms. During this phase, heat, water and CO₂ are produced and lost.

Best Management Practices to minimize losses in Phase 1:

- Exhaust oxygen rapidly through adequate compaction of the forage in order to limit time in phase one. Factors affecting compaction are:
 - Tractor time and weight – heavier tractors packing for longer amounts of time will do a better job of packing material and removing oxygen.
 - Packing layer thickness – the forage should be packed in layers no greater than 6 inches to allow for adequate packing of the material.
 - Forage particle length - shorter is easier to compact, but too short has rumen health consequences. Your nutritionist will be able to help you pinpoint the particle length that best meets your feeding needs.
 - Dry Matter (DM) of forage – wetter is easier to pack, but too wet leads to leachate and fermentation issues. Recommended DM at harvest is in the 30 - 35% range.
- Cover silage as soon as possible with plastic to prevent oxygen exposure of the forage mass.



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Phase 2 – Main Fermentation Phase. Oxygen has been depleted, but pH is still relatively high allowing spoilage microorganisms to grow. As lactic acid bacteria proliferate and consume plant carbohydrates to produce lactic acid (strong acid), the forage mass pH decreases below the critical point thus inhibiting or killing spoilage microorganisms. During the fermentation phase we observe effluents, silage gas production and shrinkage of the forage mass. A rapid decline in pH will minimize dry matter (DM) losses.

Best Management Practices to minimize losses in Phase 2:

- Harvest forage at adequate DM. If forage is too wet (DM is too low), there will be important effluent losses in this phase. Furthermore, low DM forages have lower carbohydrate content and there will be lower acid production, creating a longer period to reach the stable phase (Phase 3).
- Bacterial inoculants can be utilized to aid in the rapid decrease in forage mass pH. Cost and efficacy of additives need to be determined as additives are not a solution to poor management in other phases of silage production (poor packing and harvesting at improper DM, for example).

Phase 3 – Stable Phase. Lactic acid bacteria are dominant and lactic acid becomes the predominant end-product formed. Acid tolerant enzymes are active but little microbial activity will take place during this phase. However, if air ingresses into the silage mass, spoilage microorganisms will grow. Poor covering, inadequate weighting of covers, tears in the cover material, etc. are potential sources of oxygen exposure. Losses in phase three should be minimal.



Best Management Practices to minimize losses in Phase 3:

- Cover the silage structure properly with plastic, and place weight on the plastic cover to prevent oxygen exposure.
- Periodically evaluate the condition of the cover and repair any flaws (holes, tears) that allow oxygen to enter the silage structure.

Phase 4 – Feedout. At feedout, the ensiled forage face is exposed to oxygen, which supports yeast growth. Yeast metabolizes lactic acid to produce heat and volatile organic compounds (VOC). Silage pH increases, allowing previously inhibited fungi and bacteria to grow and further reduce silage quality.



Best Management Practices to minimize losses in Phase 4:

- Size the silage structure according to feed out needs to minimize the surface area exposed to oxygen and to rapidly progress through the silage face (depth removed).
- Minimize the time between removal of silage from the structure and feeding to animals in order to limit exposure to oxygen.
- Maintain a straight, smooth face to reduce exposed surface area and to prevent oxygen from penetrating the forage mass.

Poor silage management practices in all phases have been associated with DM losses as high as 40%. Storing forage as silage results in dry matter losses to the environment, and these losses can be categorized as avoidable or unavoidable losses.

1. Unavoidable losses:
 - Residual respiration: exhaustion of oxygen in phase one (1-4% losses).
 - Fermentation: the conversion of plant sugars to acids in the absence of oxygen (2-6% losses).
2. Avoidable losses (the target of best management practices):
 - Effluent from harvesting forages that are too wet (0-5% losses).
 - Secondary fermentation (0-5% losses).

Aerobic spoilage is categorized as both avoidable and unavoidable, because some spoilage is expected, but the extent of spoilage is within the silage team's control (proper uncovering and face management, for example).

- Aerobic spoilage during storage (1-10% losses)
- Aerobic spoilage during feedout (1-10% losses).

Silage is a high value commodity, with large potential losses. It is worth your time to sit down with your silage team (PCA, nutritionist, feeder, etc.) to ensure quantity and quality expectations are met. In times of high feed costs, high quality, home grown forages are imperative to your bottom line.

Polioencephalomalacia (Polio) in Cattle

Robert B. Moeller Jr. DVM, DACVP, DABT - California Animal Health and Food Safety Laboratory, Tulare

Polioencephalomalacia (often called "Polio" or "cerebrocortical necrosis") is a problem encountered in young growing cattle. The incidence of this condition is highest in the age group of animals from four to 12 months of age but has occasionally been seen in older animals up to 18 months of age. Animals in both pastured and feedlot/barn settings can be affected, however, it is more common in animals in a feedlot environment. Polioencephalomalacia has often been associated with thiamine deficiency in these young animals.

Mildly affected animals often go off feed and may have twitching of the face, ears, and eyelids. More seriously affected livestock may demonstrate staggering with aimless walking or circling. Often owners describe the animal as acting drunk and/or blind. Head pressing and star gazing are also common findings; down animals may throw their head, neck, and back in an arched pattern (opisthotonus). Convulsions are a common sequela later in the course of the condition. Dead or dying animals should be presented to your regional veterinary diagnostic laboratory for further examination to properly identify the problem and rule out other possible causes such as lead toxicity, plant toxicities that may damage the brain or liver, water deprivation, *Listeria*, *Haemophilus*, or other bacterial brain infections, pituitary or brain abscesses, and rabies.

Ruminants produce their own thiamine directly from bacterial and yeast fermentation in the rumen, therefore, any disturbance in an animal's ruminal microflora can lead to a significant thiamine depletion and result in this condition. A common cause of polioencephalomalacia is feeding a diet rich in carbohydrates (high grain diets) leading to ruminal acidosis. This high carbohydrate diet favors ruminal bacteria that destroy the thiamine produced in the animal. High sulfates in the diet can also contribute to polioencephalomalacia. This can occur through the drinking of water containing high sulfates, molasses or dried distillers grain in the diet (sulfur content varies with each lot for both molasses and dried distillers grain so be careful when feeding these), and the ingestion of *Brassica* species of plants (ie. mustard, kale, canola, broccoli, and cabbage-like plants). Total sulfur/sulfate concentrations greater than 1800 ppm in the animal's ration can predispose cattle to develop this condition.

Another common cause of polioencephalomalacia is the use of the coccidiostat, Amprolium, which acts as a thiamine analog and inhibits thiamine used in the animal. The ingestion of thiaminase containing plants, such as the rhizomes of bracken fern, can also be a cause for this condition, but are rare in California.

The gradual addition of feed concentrates with a high carbohydrate load and substances with elevated sulfur content will assist in preventing polioencephalomalacia in young cattle. Diets high in sulfates can be very dangerous since ruminates can lose their sulfur acclimation rapidly (some say within three days after sulfur removal from the diet) which can lead to new cases of polioencephalomalacia when feeds high in sulfur are again added to the diet.

When animals are identified with polioencephalomalacia, the addition of extra thiamine to the ration often helps to prevent further problems in the herd. In some cases, particularly where the animal is down and not eating, injectable thiamine may also assist in treating these affected animals. As always, when dealing with animal issues, consult with your veterinarian before adding anything to the animal's ration or treating the animal with an injectable product.

Schmallenberg Virus and Causes of Abortion in Dairy Cattle Submitted to the California Animal Health and Food Safety Laboratory

Dr. Pat Blanchard, DVM, PhD, CAHFS- Tulare

Schmallenberg virus, an orthobunyavirus transmitted by *Culicoides*, has recently been identified in sheep, goats and cattle in Europe associated with increased premature birth, stillbirths, and fetuses or neonates with twisted legs, spine, brain deformities, muscle atrophy or neurologic signs. In cattle, initial entry of the virus into a herd may be associated with short duration of diarrhea, fever and decreased milk production with fetal problems occurring months later. USDA has posted a case definition, fact sheet and laboratory guidance document and has requested diagnostic labs to submit fetal/calf brain, dam and fetal/calf serum as part of a national surveillance effort to determine if this virus exists in the United States (http://www.aphis.usda.gov/animal_health/animal_diseases/schmallenberg/).

Other causes of fetal/neonatal skeletal or brain deformities seen in California among cattle include Bovine viral diarrhea virus, Bluetongue virus, skunk cabbage (*Veratrum californicum*), lupines, locoweed, acorn calves, vitamin A deficiency and genetic (cervical vertebral malformation) linked to specific genetic lines or sporadic gene mutations.

The **most commonly diagnosed causes of abortion** in 300 fetuses submitted from dairy cattle to the California Animal Health and Food Safety laboratory since January 2010 are *Neospora* (23.7%) and bacterial (19.7%) with all other causes seen in <5% of cases for each category. *Leptospira* was the most common bacterial cause (15.3% of the bacterial abortions). Venereal *Campylobacter* was only found in 2 fetuses. BVDV was the most common viral cause but still rarely diagnosed (5 cases). Congenital deformities were only found in 2.3% of all abortions.

The Added Value of Cooling!

Jed Asmus, Nutritionist, Etchebarne Inc. & Jennifer Heguy, Stanislaus/San Joaquin Dairy Advisor

It is relatively easy to measure the effects of heat stress on milk production and reproduction in lactating pens. In the summer months, volume of milk drops and pregnancy rates start to decrease in July and continue to decline through the fall. In response to these changes, many dairies have added fans and soakers (sprinklers, etc.) to lactating pens, which are turned on as temperatures near 70°F. The science justifying cooling cows in the lactating strings is well documented, but have you ever wondered what cooling can do for your dry cows?

Findings of a recent study were published in the Journal of Dairy Science, illustrating the value of cooling dry cows. From the month of May through November, mature dry cows were assigned to one of two groups: cooled or not cooled. Both groups of dry cows were housed in the same barn, fed the same ration, and managed in a similar fashion. The only differences were that sprinklers and fans were utilized in the cooled group, beginning when temperatures reached 70°F. After calving, both groups were housed in a freestall barn with cooling. During the study, the average temperature-humidity index (a measure of how hot it feels when relative humidity is factored with actual air temperature) was 76. To put this index into perspective, the average “max” temperature-humidity index in California’s Central Valley during the months of May-November (2011) was 82. In short, the heat was comparable with California conditions.

Non-cooled cows produced 15% less milk, or 11 pounds LESS milk each day after calving up to 40 weeks in milk. Two key factors contributed to the observed reduction in milk yield by non-cooled cows. One, non-cooled dry cows ate 16% less feed each day during the dry period, leaving them less prepared for the subsequent lactation.

Although not statistically significant, cooled dry cows tended to eat more dry matter after calving and as lactation advanced. Second, the non-cooled, heat stressed dry cows had less mammary cell development in the dry period, thus compromising lactation performance after calving. The cell damage to the udder was further quantified by the fact that the heat stressed dry cows tended to have higher somatic cell scores during lactation than cooled dry cows.

What could this mean to the average dairy producer?

Let’s use a 1,000 cow dairy for our example (Table 1).

In California's Central Valley, we had 214 days with temperatures of 70°F or greater during 2011 (7 months). Assuming heat stress at 70°F, our example dairy calved 581 cows that were stressed due to heat in 2011. If each cow lost the same amount of milk as reported in the Journal of Dairy Science study, with an average milk price of \$16 per CWT, these dairy cows would have produced less milk - \$286,837 less in the first 280 days of lactation compared with cows cooled during the dry period. But wait, the scenario gets worse! This simplified example fails to account for other losses, in particular reduced reproduction that would only increase the cost of not cooling your dry cows. Cooling dry cows makes economic sense because what happens during the dry period impacts the subsequent lactation and reproductive performance of your cows.

Figure 1. Example California Dairy

# cows in the herd	1,000
# mature dry cows calving each month	83
# months with heat stress (HS)	7
# days with HS	214
# cows calving with HS	581
# days milk yield affected	280
Pounds of milk lost/cow/day	11.02
Total milk (lbs) lost due to calving in HS	1,792,734
Milk value lost – all cows calving in HS	\$286,837
Milk value lost/day in 280 d of lactation	\$1,024

Thinking About Closing Your Dairy?

Take steps with regulatory agencies if you are considering facility closure. The Regional Water Quality Control Board, and potentially your Air Management District need to be notified if you intend to close your facility. Of course you'll deal with CDFA and potentially other agencies as well.

The information provided here is specific to the Central Valley, however similar processes exist with other Regional Water Quality Control Boards. If the facility is going to be removed from coverage under the General Order for Existing Milk Cow Dairies, the operator must submit a letter requesting removal from the order and identify the proposed future use of the facility. Also, a closure plan needs to be submitted. A template can be obtained from Regional Board staff and completion of the middle column of the form with associated explanations fulfills the requirement. A closure plan should address: future use of facility; removal of manure from corrals, settling basins, and lagoons; maintenance plans for any use of manure or feed storage areas; and estimated date of cleanout for existing manure and feed storage areas. Key to this plan is identification of when all cleanup work will be complete.

Once the animals are removed from the facility and the feed and manured areas are all cleaned out, a post-closure report should be completed and submitted to the Regional Board (the right hand column of the previously completed form). Staff will call the facility owner and schedule a final inspection. The Executive Officer sends a letter removing the facility from the General Order once completion of closure activities are verified.

There are a few additional important things to consider. **Fees:** Each facility covered under the General Order pays annual fees. If the facility closure is verified by June 30 there will be no fee invoice sent in the year ahead. If the facility has removed animals but has not had closure verified, the facility should request a reduced fee. The 2011-2012 fee for less than 300 dairy cows was \$535 and is subject to increase when the State Water Board evaluates fees each May.

Future use: If the dairy is going to be rented as a dairy in the future and is currently empty, it should not go through closure. The facility must stay current with all monitoring and reporting requirements (including groundwater monitoring). It is important to remove existing manure prior to the next rainy season.

Converting from dairy to heifer raising operation: If the facility is going to be used as a heifer raising operation, it still needs to go through the closure process. Manure cleanup may vary if ponds, basins and solid manure storage areas will be used for the heifer operation. Part of the dairy closure process will require submittal of a Report of Waste Discharge for the new heifer facility. For a dairy currently covered under the General Order, this amounts to submission of Form 200, the appropriate fee based on number of animals (under the feedlot category of the fee schedule, which is less than the dairy category), and a description of any changes to the waste handling operations at the facility. As a side note, the Regional Board is currently working on a General Order for heifer operations which will have similar monitoring and reporting requirements as the existing General Order for Existing Milk Cow Dairies.

If you have questions about requirements for facility closure don't hesitate to contact Regional Board staff.

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