

BEYOND THE PAIL: HUMAN RESOURCE PROCESSES IN THE DAIRY FARM INDUSTRY

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Taylor Coates was the founder of Lucky Churns Dairy Farms. After completing her degree in animal science at Cornell University, she returned home to the rural Southeast. Finding that her family did not share her aspirations for their own small dairy farm, Taylor set her sights on establishing her own Dairy Farm business. In 1999, she purchased a small farm with 750 cows, and retained the 20 employees who were working on the farm. The knowledge Taylor brought to the farm resulted in a healthy and productive herd, as well as a sustainable and profitable business.

By 2017, Taylor had grown Lucky Churns Dairy Farms to three locations with a total of 7,000 cows and 130 employees, producing 620,000 pounds of milk each day. By 2022, Lucky Churns had seven locations with 17,000 cows and 240 employees producing 1.4 million pounds of milk daily (see Exhibits 1 and 2).

Taylor recognized the need to adopt new ways to manage the rapid growth and larger scale of the business. In 2015, she hired a Chief of Operations Officer (COO) to run the day-to-day operations of the Dairy Farm. The COO implemented new procedures that linked directly to dairy operations: feed and nutrition, animal care, efficient milk production and herd management. Nonetheless, essential support functions, specifically human resource management, received less attention from senior management.

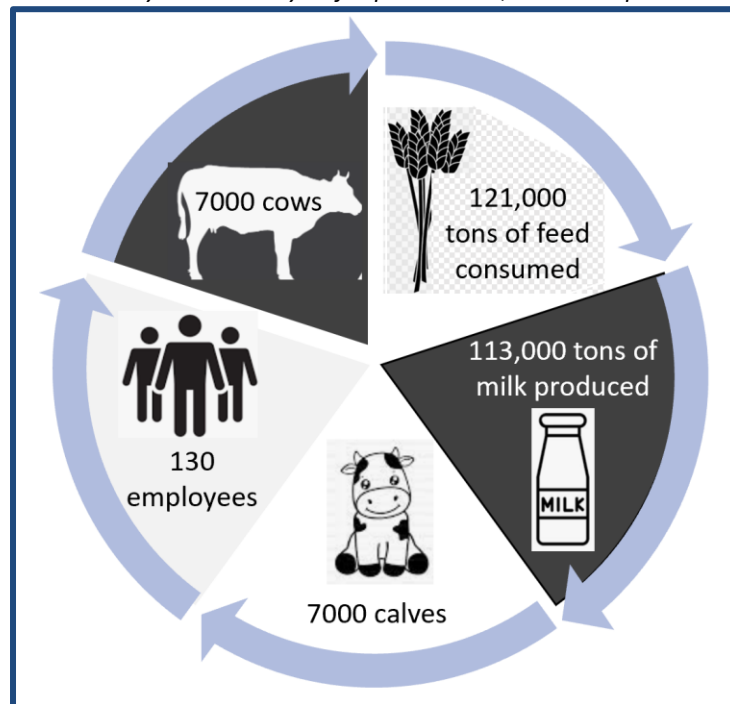
Exhibit 1. Lucky Churns Dairy Farms Growth 1999-2022

Source: Lucky Churns Dairy self-reported data, used with permission

Growth Indicator	1999	2017	2022
Number of farm locations	1	3	7
Number of cows	750	7,000	17,000
Pounds of milk production per day (000)	42	620	1,400
Number of employees	20	130	240

Exhibit 2. Lucky Churns Dairy Farms Scale of Operations

Source: Lucky Churns Dairy self-reported data, used with permission



Taylor and the COO knew a lot about dairy farm operations, but had little knowledge about why human resource management mattered, or how to implement it. The growth and success of the farm had disguised the lack of attention paid to human resource policies and procedures. Lucky Churns was now at the pivotal juncture where the size of the business actually accentuated the absence of HR management. Taylor and the COO agreed that it was time to take the next steps toward adopting HRM practices that met the needs of a dairy farm with 130 employees. Moreover, the dairy farm was poised for further expansion. Although they didn't

know how to go about this themselves, Taylor knew exactly who did, and immediately called her friend Sam Boswell, a professor of management at the State University:

“Sam, I think it’s time the farm started to prioritize and sort out how we manage our employees,” she said. “I know you’ve been talking to me about this motivation and performance management stuff for years, and I think I’m beginning to see how it could be important for us.” She continued, “the thing is, I have no idea how to go about this, and I would like your help.”

As Sam listened carefully to Taylor’s observations and concerns about the farm, he realized the situation was unfolding like many others before it. The ingredients that made someone a subject matter expert, and even a successful entrepreneur, did not necessarily imply good management, especially in the area of human resources. Sam recommended talking to the employees and supervisors at the farm as a first step toward identifying areas of concern and opportunities for improvement.

Over the course of about four days, Sam conducted interviews with all 5 managers and 17 supervisor-level employees. He asked four open-ended questions of each employee.

- Tell me what you do here?
- What do you think is working well for the organization?
- What are some areas for improvement in the organization?
- What would you like to see change within the organization?

The managers and supervisors described everything from the supervision of employees milking the cows, to managing employees maintaining equipment, all the way to training employees to identify and treat damaged or diseased hooves.

When asked about areas for improvement a few topics revealed themselves as common concerns. One topic was employee performance management. Several comments that Sam heard from the managers and supervisors illustrated this theme. One manager said, *“I have experience doing the job I manage, but it can be difficult to explain good versus bad performance to my subordinates.”* Further, some supervisors expressed a disconnect between

employee performance and the rewards they received for their performance. For example, one supervisor said,

“I wish there was more consistency with how we measure performance and give rewards,” while another said, *“the workers can get really upset if they feel like they are doing a good job, but they are still not getting pay raises or promotions.”*

It seemed that although the organization had well-organized day to day operations, human resources had not received much attention. The dairy was experiencing *“growing pains”* in the form of inconsistency and ambiguity surrounding employee feedback, rewards, advancement and dismissal.

Although Taylor was not surprised by the responses of the employees, their input did highlight the bigger questions surrounding performance management.

“How might the job satisfaction and motivation of the employees be affected by inconsistent feedback and rewards across supervisors? Could these perceived inequities lead employees to think that they were being treated unjustly or unfairly by the supervisors, or by the company?”

Taylor felt the farm was at a stage where she could get out ahead of these issues. She knew her employees personally and they trusted her, but she realized that, if her company continued to grow as planned, she would soon reach a point where her personal leadership could not substitute for a systematic approach. Taylor was glad to have Sam’s expert help to design and implement a durable performance management system that could be used consistently by all managers and supervisors, and would be sustainable as Lucky Churns Dairy Farms continued to grow.

Background: The Dairy Farm Industry

Dairy farms produced only one product - milk from cows. The raw milk was sold and transported from the farm (shown in Exhibit 3) to dairy processing companies that produced dairy foods such as milk, cheese, butter and yogurt. Demand for milk and other dairy products

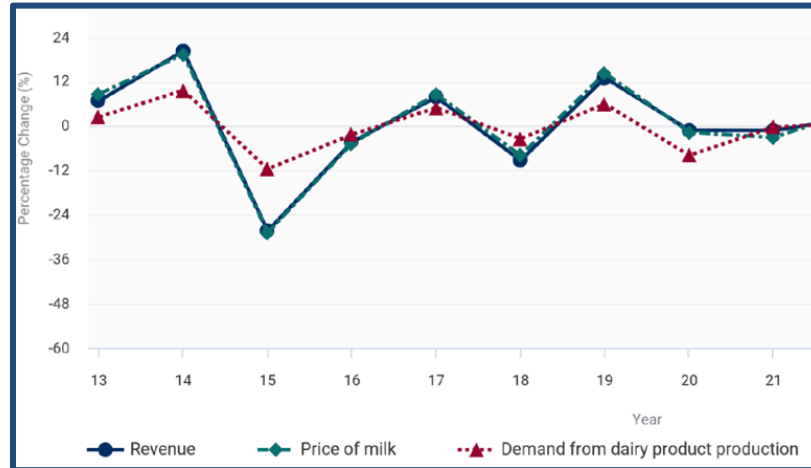
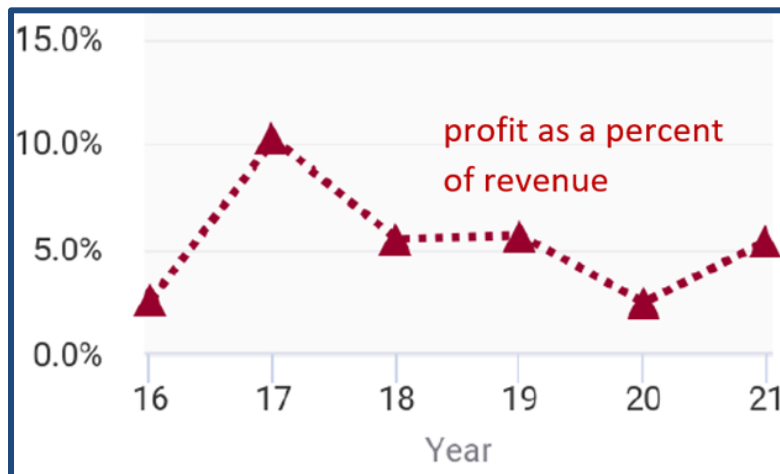
was relatively stable as it is considered a dietary staple. However, demand shifts within the category reflected changes in consumer dietary habits and preferences. For example, milk consumption was down due to substitutes from plant-based milk products and other beverages, while consumption of cheese continued to increase (MarketLine 2022).

Exhibit 3. Milk Tankers Transport Raw Milk from the Farm for Processing

Source: Lucky Churns Dairy, with permission



More than 35,000 dairy farms across the United States raised cattle for milk production. The industry was highly fragmented, with 97 percent constituted by small, independently owned and operated dairy farms. Together these farms employed more than 132,000 people and generated \$41 billion revenue. Annual revenue growth in the dairy industry averaged 1.5% during the five years from 2016-2021, and the average profit margin in 2021 was 5.4%. Nonetheless, the year-to-year pattern of revenue and profit was volatile over the period (IBISWorld 2022).

Exhibit 4. Industry Milk Price and Revenue Volatility*Source: IBIS World 2022***Exhibit 5. Industry Profit Volatility 2016-2021***Source: IBIS World 2022*

Revenue and profit margins for dairy farms were largely influenced by the price of milk, which was highly volatile, as shown in Exhibits 4 and 5. Milk prices were dictated by downstream producers and the government, so dairy farms had little control over the price they charged for their product. For example, in 2018 surplus supply triggered a price drop and squeezed profit margins, but in 2019 dairy farms were successful in reducing production and driving milk prices, revenues, and profits higher. The Dairy Producers Margin Protection Program (2018 Farm Bill) offered some risk protection from the volatility in milk prices. This program subsidized the minimum margin coverage between total milk sales and total feed costs. The cost of feed

constituted more than 50 percent of the cost of milk production and, like the price of milk, was subject to high volatility. Overall, volatility in revenue and profit led to further consolidation in the industry as struggling farms were taken over by stronger performers seeking economies of scale (Curran 2021).

Although the industry remained highly fragmented, the geographic concentration of small dairy farms that historically characterized regions of the U.S. largely remained intact. California and Wisconsin were the largest producers, together making up about 40% of U.S. milk production (Shahbandeh 2022). Pennsylvania, New York, Texas and Idaho were also known for dairy production. The structure of the industry in the Southeast region of the U.S., where Lucky Churns was located, was representative of the prevailing business model for dairy producers, where low-cost economies of scale had resulted in consolidation into fewer, more automated farms. These farms had larger herds and greater milk production capacity than did traditional small farm operators.

Lucky Churns Dairy Farms

Lucky Churns Dairy Farms generated revenue from only one source, the production of milk from cows. The amount of milk the cows produced, and the quality of that milk, were critical to the success and sustainability of the farm (<https://extension.psu.edu/animals-and-livestock/dairy>).

Although Lucky Churns produced just one product, the scope of operations encompassed much more than milking cows. Taylor thought it was important to provide Sam with a first-hand view of the farm operations, so he would have a better context for understanding the roles of the employees. As Taylor and Sam embarked on their tour of the main location, the first thing that struck Sam was the ... smell; yes, smell was definitely the right word. Even more astounding, however, was the sheer scale and scope of the operation. The aerial view photo in Exhibit 6 shows the large free stall and feed barns, the milking parlor, multiple silage helix and

outbuildings. The accompanying schematic in Exhibit 7 also shows equipment, pasture areas (top) and the location of the calf hutches (right).

Exhibit 6. Aerial View of a Lucky Churns Farm Location

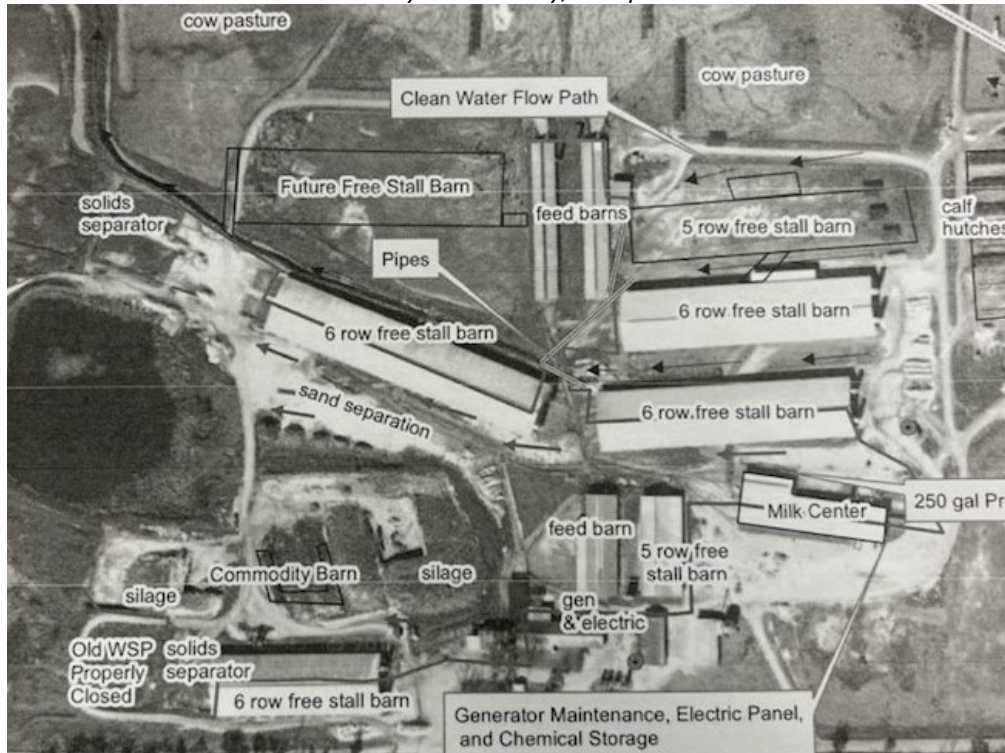
Source: Lucky Churns Dairy, with permission



Aerial view of one location showing milking parlor (center), free stall and feed barns (perimeter), silage mounds (left), and outbuildings.

Exhibit 7. Lucky Churns Dairy Farms Schematic

Source: Lucky Churns Dairy, with permission



The milking parlor was the heart of the dairy operation. Here, the milkers used sophisticated mechanisms for milking each cow safely and efficiently. Sam observed the orderly fashion in which the cows rotated through the milking parlor (Exhibit 8). In fact, it seemed as if the cows were directing the process more than the herdsman, whose job it was to lead the cows through this part of their lives. The cows walked in placid, ordered lines ... which made sense when Taylor explained that cows became physically uncomfortable if they were not milked on a reliable schedule. At Lucky Churns, the cows were milked every 8 hours around the clock, 365 days a year.

Exhibit 8. Cows Line up at the Milking Parlor

Source: Lucky Churns Dairy Farms, used with permission



Taylor explained that managing the lactation cycle of the herd was the most important driver of milk production at the dairy. She then described how feed and nutrition, replenishing the herd, and the health and well-being of the cows all affected the lactation efficacy of the cows.

Lactation Cycle

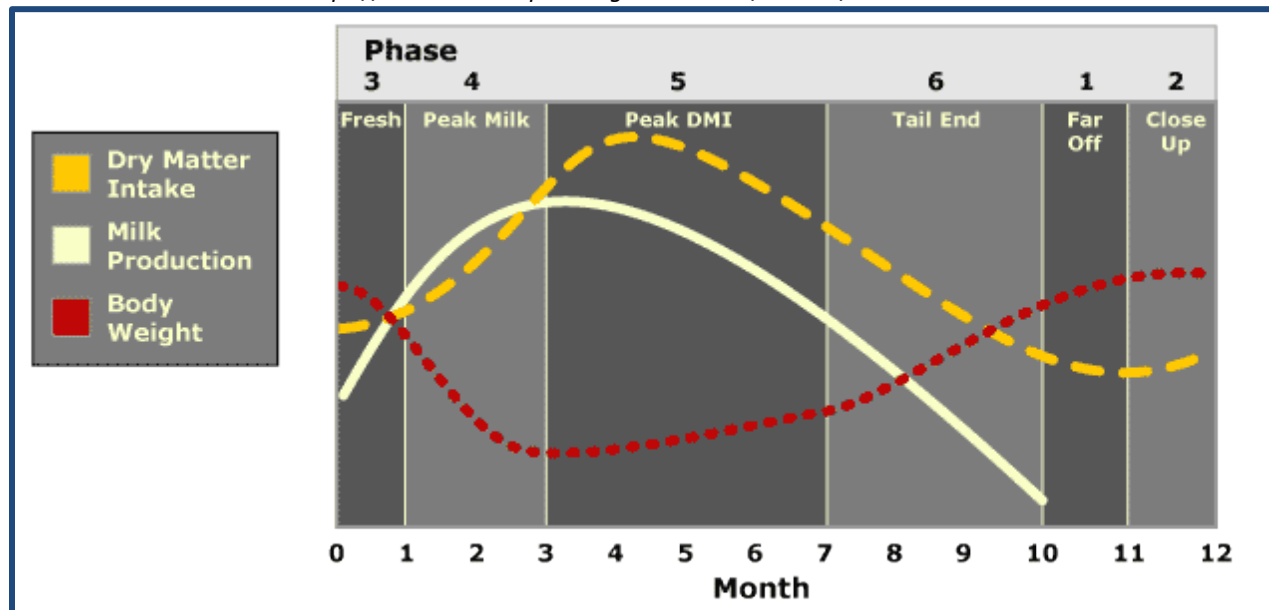
Lactation is the secretion or production of milk by the mammary glands in female mammals after giving birth (The American Heritage® Science Dictionary 2011). To produce milk, a cow had to give birth to a calf. Generally, a cow was bred to calve every 12 months. The gestation period for a cow was a little more than 9 months. Following the birth of the calf, the cow produced milk for 10 months, then rested for 2 months until the birth of the next calf; and repeated the cycle. Healthy cows produced milk in this cycle for seven to ten years before they were culled from the herd.

The lactation cycle of a female cow began when its calf was born. The first three days of milk, called colostrum, was fed to the calf. This early milk had extra nutrients and antibodies that the calf needed in its first few days of life. After the calf was separated, the cow was milked in the milking parlor three times a day. Milk production increased steadily to reach peak production three months after the calf was born, and then began to taper off. At this three-month point, the cow was “bred back,” a term used to describe breeding a lactating cow for its next calf. The cow was then milked for another seven months while it was pregnant with the next calf. Milk production declined during this period until the farmer stops milking the cow, about ten months after the first calf was born. The cow rests and replenishes for two months to prepare for the birth of the next calf, and the cycle begins again.

Milk production during the lactation cycle is illustrated in Exhibit 9 below. To smooth the peaks and troughs in the lactation cycle and assure consistent milk production, the farmer kept a portion of the herd at each stage of the cycle. For example, some cows were at peak production, while others were resting (French 2022).

Exhibit 9. Lactation Cycle of a Dairy Cow

Source: OSU Extended Campus

<https://courses.ecampus.oregonstate.edu/ans312/index.htm>**Feed and Nutrition**

Taylor explained that a proper diet was essential to the health of the herd and the milk production of the cows. Nothing affected the quantity and quality of milk production - and therefore the sustainability and profitability of the dairy farm - more than what the cows ate. Exhibit 9 shows how the feed intake and nutritional requirements of dairy cows changed during the lactation and gestation cycles. A milking dairy cow ate about 95 pounds of feed each day. The cows' diet included a combination of dry matter such as hay or grass, wet feed called silage, and a grain mix (e.g. corn, soybean) with vitamin and mineral supplements (Fischer & Hutjens 2019, <https://dairy-cattle.extension.org/how-many-pounds-of-feed-does-a-cow-eat-in-a-day/>). A bovine nutritionist visited Lucky Churns Farms several times a year to review milk production and make recommendations to optimize the cows' diet.

Given the sheer quantity of feed consumed, and the critical role of nutrition in milk production, it was not surprising to learn that feed was the single largest cost component of running a dairy farm (French 2022). Exhibit 10 depicts the relative cost of milk production at Lucky Churns.

Feed constituted 54% of the total cost, more than twice as much as any other input. Like many dairy farms, Lucky Churns grew much of its own feed and produced its own silage (fermented grasses). The farm partnered with local growers for agricultural crop byproducts that provided a low-cost source of high nutrient food for the silage. Controlling the cost of feed without compromising the essential nutritional needs of the herd was a constant challenge for the dairy farmer.

Exhibit 10 also shows the other costs of milk production such as maintenance and animal care (22%), labor costs (12%), and herd replacement costs (12%). Like most businesses, dairy farms strived to attain optimal output, in this case milk, while controlling the cost of inputs. In 2017 the price of milk averaged about \$16.00/cwt; where cwt = hundredweight, or 100 pounds of milk (<https://tradingeconomics.com/commodity/milk>). One gallon of milk weighed 8.6 pounds. Dairy farmers tracked input costs in a comparable metric known as \$/cwt produced, which was the actual dollar cost of producing 100 pounds of milk. These costs amounted to about 91% of the revenue received from milk production.

Exhibit 10. Cost of Milk Production

Source: Lucky Churns Dairy self-reported data, used with permission

Feed	54%
Other (maintenance, husbandry, etc.)	22%
Labor	12%
Replacements	12%
Total	100%

Sustaining and Replenishing the Herd

Lucky Churns managed the herd to maintain a constant lactating population and sustain a consistent volume of milk production. Managing the life cycle of a herd with 7,000 cows was no small feat, and depended on several variables.

The cull rate was the percentage of the herd that was retired from milk production each year due to age or health related factors that depleted milk production. The average cull rate at Lucky Churns was typical of most dairy farms at 30-35%. The culled population was replaced by adding new cows to the herd. Ideally, the herd was replenished from the stock of calves born on the farm. A female calf that has been separated from its mother but has not yet given birth to its own calf was called a heifer. Heifers grew for about a year before they were bred. After the heifer has had its first calf, it was considered a mature female and called a cow. The cow was about two years old when it started producing milk and became part of the lactating herd.

Raising heifers was an investment in the future of the farm. Well grown heifers improved milk production and lifetime productivity, and reduced replacement costs

<https://www.dairynz.co.nz/animal/heifers/>). Healthy heifers ensured the future flow of milk and revenue for the dairy, so farmers took care to ensure best practice breeding, birthing, and development of heifers to enter the herd. Herdsmen, as they were called at Lucky Churns, had the primary responsibility for raising the heifers.

Health and Wellbeing

The last stop on the tour was one of the several huge, open sided barns that the cows called home for much of their day (Exhibit 11). Beyond the essential milking and feeding, maintaining high standards of both physical and mental health for the animals was critical. As they walked through the barn, Taylor explained that care was taken to keep the animals' environment as clean and orderly as possible. Sam learned that cows experiencing stressful environmental conditions were not as productive as those in peaceful circumstances. In other words, happy cows were a major focus of the operation.

Exhibit 11. Clean and Orderly Barns Keep the Cows Healthy and Happy

Source: Lucky Churns Dairy, with permission



Stress. The expression “*keep calm and carry on*” is an apt description of dairy cattle. Dairy cows were creatures of habit. Cows were happiest when they followed their three times per day milking schedule. Cows were even observed to line up for the milking parlor on their own when it was time for them to milk (Exhibit 4). When they were not milking, the cows spent most of their time eating or napping. Cows needed a clean, orderly environment. Dairy farmers took care to keep the milking parlor clean and sanitary, and the feed barns clean and orderly. Disruptions or neglected hygiene caused stress for the cows. Stressed cows produced less milk; happy cows produced more milk.

Disease. The most common disease on dairy farms was mastitis. Bovine (cow) mastitis was an inflammation of the mammary gland (udder) caused from trauma or an infection, leading to abnormal and decreased milk production (<https://www.vet.cornell.edu/departments-centers-and-institutes/baker-institute/our-research/bovine-mastitis>). Penn State Extension estimated that mastitis cost U.S. dairy farmers an average of \$110 per cow per year in lost milk production (Yutzy 2019). Dairy farmers managed the impact of mastitis on cow health and milk production through prevention, monitoring, detection and treatment. Prevention was achieved by following published guidelines for best milking practices and establishing standard operating procedures for cleanliness and cow handling (Cheng & Han 2020).

Monitoring and detection of mastitis was done in two ways. The first was simple observation. The milkers checked the cows' udders for any signs that mastitis might be developing. Milkers looked for irregularities in the consistency of the milk as indicators of potential mastitis. The second method was regular testing of the somatic cell count (SCC) in the milk. Somatic cells (SC) were naturally occurring antibodies in cow milk. A low SCC indicated healthy cows, and higher quality milk. High SCC indicated that the cow was producing antibodies to fight infection or inflammation from mastitis. Cows with high SCC were separated from the milking herd with a treatment plan (Sharma, Singh & Bhadwal 2011).

Milk somatic cells (SCs) were a mixture of milk-producing cells and immune cells. These cells were secreted in milk during the normal course of milking and were used to monitor the prevalence of mastitis in dairy herds, as an indicator of raw milk quality to processors, and also as a more general indicator of the hygienic conditions of milk production on farms. Any change in environmental conditions, poor management practices, or stressful conditions could significantly increase the amount of SCC coming in milk. Good hygiene and proper nutrition help reduce milk SCC. Processors paid a premium for low count milk because milk with low SCC meant better quality milk products with a longer shelf life (Alhussien & Dang 2018).

Hoof disease and lameness were other diseases that plagued the dairy industry. Cleanliness, ample space for movement and resting, and preventative hoof care were essential to stave off hoof rot and lameness, which affected not only milk production, but also the overall health of the herd <https://extension.psu.edu/prevention-and-control-of-foot-problems-in-dairy-cows>. Lucky Churns sponsored an employee for extensive training and certification in bovine foot care. The employee, in turn, trained supervisors at every location.

As Taylor proceeded with the *show-and-tell* at Lucky Churns, Sam was repeatedly surprised at scope and complexity of the dairy farm operations that culminated in the milking of cows. He also realized that the employees at Lucky Churns were not at all the itinerant farm labor that characterized much of the southeastern regions' agricultural sector. Instead, the employees at

Lucky Churns were relied upon to be eyes-on and hands-on for assuring a healthy and productive herd and, ultimately, a sustainable future for the business.

Throughout the farm, Taylor introduced Sam to employees who explained their positions and reflected on their experiences working at Lucky Churns. As they met more people, the conversation turned over and over again to the employee-centered processes that Taylor felt were increasingly in need of attention.

Lucky Churns Employee Roles and Responsibilities

As Sam learned the tasks and responsibilities of these positions, he developed a clearer picture of how different roles fit into the overall ecosystem of farm operations. (Positions are summarized in Exhibit 12.) The heart of the process was the milking parlor, where each cow in the active herd was milked three times a day. Each of the three locations employed three milkers on each of three shifts. The milker was the position where most of the turnover in the operation occurred, and it also happened to be the position that required the most attention to detail and consistency of performance. Employees typically started as milkers, but frequently moved to other positions as openings occurred.

Exhibit 12. Employee Positions and Pay Ranges

Source: Lucky Churns Dairy, with permission

Position	Pay Range*	Hours worked/day
Milker	\$90-\$105/day	8 hours
Cowboys	\$9-\$14/hr.	10-11 hours/day
Herdsmen	\$9-\$14/hr.	10 hours/day
Feeders	\$9-\$14/hr.	10 hours/day
Sand Guys	\$9-\$14/hr.	10 hours/day
Maintenance	Negotiated based on skill and tenure	8-10 hours/day

**In addition to hourly or daily wages, employees live in company-provided housing, and are also paid an annual bonus at the discretion of the senior managers of the company.*

While the milkers stayed in the parlor to milk the cows, the cowboys (as they are called at Lucky Churns) brought the cows into the parlor and escorted them back to the barns and corrals before and after the milking process took place. There are three cowboys on duty on each shift at each location. Herders were responsible for watching over and caring for the cows in between milking sessions, tending to needs such as the treatment of damaged or diseased hooves. The herdsmen not only looked after the cows that were actively milking, but they were also responsible for caring for the cows that were resting or preparing to give birth to their next calves. There was one herdsman on duty for each shift at each location. The final positions required for the care of the actively milking herd were the “sand guys” who mucked out the areas where the cows rested, and the feeders, who prepared the feed and made sure the cows received proper rations. There were five “sand guys” and five feeders, spread across the three locations.

In addition to the employees who were engaged in the milking operation and the care of the milking herd, there were employees who cared for the calves that were being born as well as the calves that would grow into the heifers. There were 11 dedicated herdsmen (3 - 4 at each location) that cared for the calves over the first 60 days of their lives (when care needs were highest), and 6 herdsmen (two per location) who cared for the heifers from the age of 60 days until they give birth to their first calves and moved into the active milking herd. The entire operation was supported by 7 maintenance employees (2 - 3 at each location) who tended to the physical plant and equipment needed to keep the whole operation up and running.

The entire operation was overseen by 5 senior-level managers and 17 supervisors. The senior-level managers were Taylor (owner) and the COO, who both worked across all of the locations, and one general manager at each of the three locations. The 17 supervisors oversaw each of the “call centers” (the milking parlor, feed management, and the calving/heifer care centers, etc.).

The supervisors were employees who had come up through the ranks and had been moved into “lead employees” then supervisors based on their experience and seniority. Their pay did not fall into any specific range, but rather was negotiated based on skill, experience, and tenure with the organization. At the low end, young tenured supervisors’ pay overlapped with longer tenured employees’ pay. At the high end, some young supervisors earned significantly more than did longer-tenured employees.

The overwhelming majority of employees at Lucky Churns Farms were male. Many were Latino and spoke Spanish as their first language. Turnover was low, averaging around 10% a year, and more than half of the employees had been with the company 10 years or more. Promotion into management positions had come almost entirely from within, even to the senior management ranks. For example, one of the location general managers began working for the company as a milker, and worked his way up from there. With the expansion of the business, there were continual opportunities for people to move into new positions if they wanted to grow their skill sets or try something new.

The Dilemma

As Taylor thought about the state of her business, she could see progress in standardizing operations and laying the foundations for continued growth. However, the comments from employees and supervisors revealed issues that needed to be addressed. As she reviewed the findings, Taylor realized that the comments coalesced around a few key issues. First, while the practice of promoting-from-within had resulted in a supervisory staff that had operational experience with the practices and standards of the dairy, it had also resulted in a supervisory staff with little or no training in the management of people - and no mechanism in place to develop their ability to do so. There weren’t any standard practices to ensure consistency in managing people across the company. Supervisors were left on their own to determine how and when to evaluate employees, and what criteria to use for evaluation.

Second, while employees knew the company promoted from within, they didn't know what they had to do to become a candidate for promotion. They also didn't know what factors were under their control to increase their pay. This created some dissatisfaction within the company since the highest paid employees in any given job were paid up to 50% more than the lowest paid employee in the same job. It also created a sense of competition among the supervisors, as some were more liked by employees than others, based on their individual approaches to evaluating, developing, and compensating their direct reports.

These issues also pointed to the bigger questions surrounding performance management.

Taylor considered,

“How might the job satisfaction and motivation of the employees be affected by inconsistent feedback and rewards across supervisors? Could these perceived inequities lead employees to think that they were being treated unjustly or unfairly by the supervisors, or by the company?”

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K. Nathan Moates is an Associate Professor of management at Valdosta State University, in Valdosta, Georgia. He received his PhD in 2008 from Auburn University, where he studied organizational analysis and change. He teaches a variety of management courses focusing on organizational behavior and human resources. Dr. Moates' research interests include cognitive psychological concepts such as perspective taking and empathy, as well as "Macro" concepts, such as organizational development and leadership. He has had the opportunity to participate in organizational development efforts in a variety of industries, including agriculture, healthcare, and the public sector. Dr. Moates is legally blind, and also has a strong interest in both behavioral and technological adaptive approaches at work. He enjoys spending time with his family, and listening to great music and literature.



Jonathan V. Krispin is Associate Professor of Management, joining the Langdale College of Business at Valdosta State University in January, 2013, returning to academics after a 17-year career in the private sector. His research interests are primarily in the areas of organizational culture, business process improvement, organizational change and adaptation, and leadership development. Since returning to academics, Jonathan has focused his writing and research efforts on joining concepts from behavior analysis with concepts from systems analysis, particularly from theory related to self-organizing systems.



Mary Beth Rousseau is an Associate Professor of management at Valdosta State University, Valdosta, Georgia. She holds a PhD in Organizations and Strategy from University of Tennessee, Knoxville. Her research is primarily in the areas of innovation and performance, and family business. Dr. Rousseau has also authored pedagogical studies and case research.



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