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By Carolina Pinzon
BouMatic Global Training Coordinator

Optimising milk production using SOPs

Every dairy producer's goal should be to harvest the maximum quantity of high quality milk from healthy cows. To achieve this goal a dairy farm business needs dedicated workers who perform various procedures throughout the dairy, consistently and accurately.

Most people naturally want to be effective, but without a clear direction or expectations, success can be difficult to achieve. People need consistency to achieve top performance

The difference between a highly successful dairy and an average dairy is management and the ability to establish good, standard operating procedures (SOP) for all tasks. An SOP is a written document or instruction detailing all steps and activities of a process or procedure. SOPs will reduce system variation, which is the enemy of optimum milk production.

Well written SOPs provide direction, improve communication, reduce training time and improve work consistency.

Producing a high quality product depends on the consistent operation of all systems. At BouMatic we have established SOPs in manufacturing to maintain the highest quality product output. We continuously motivate, coach and train our employees to maintain the highest quality standards.

Successful manufacturing requires never ending attention to detail. Successful dairy operations require a similar attention to detail and implementation of processes.

SOPs need to be developed, implemented and monitored for tasks such as prepping cows, moving cows, maintaining equipment, cleaning stalls, feeding, cleaning systems, treating mastitis and so on.

All management decisions aimed at optimising milk production should focus on doing what is best for the cow. On your dairy, do you have standard operating procedures for these tasks? A task that seems simple to you may not be so obvious to another person who is asked to complete it. SOPs also require preparation time. Before implementing SOPs on your dairy, ask yourself if you are willing to dedicate the time necessary to develop them thoroughly.

Developing SOPs is the first step. The dairy manager should provide leadership during the SOP development stage and work with employees and consultants, if needed, to reach a common goal.

Descriptions for completing a task need to be clear, short and focused so they can be understood by anyone asked to perform the task. Well written SOPs are effective communication tools that contribute to employee and manager satisfaction.

Implementation is the next step once SOPs have been developed. SOPs should be posted, not filed or hidden. Consider laminating and posting SOPs in the work area. They are not a replacement for effective training, but SOPs can be a tool to reduce training time. Well written SOPs will facilitate training and provide an excellent ongoing reference for managers and employees.

Once SOPs are developed and implemented, dairy managers need to monitor and make certain established SOPs are being followed and successfully completed.

Evaluation of SOPs is an ongoing task for dairy managers.

Remember the team needs continuous motivation and coaching. Talk to them about the advantages and results of having SOPs and modify them based on their input if necessary.

Optimising milk production and producing quality milk requires vigilance and attention to detail at every milking, every day. All procedures should be performed the same by all employees to achieve consistency. This is especially true for tasks involving direct contact with the dairy herd. Animals thrive on consistent treatment. Standard operating procedures are powerful tools to control work procedures.

They define the details that make the difference between success and failure in today's dairy economy. ■

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Can automatic feeding systems improve dairy profitability?

On any dairy operation today, feed costs constitute 50-60% of the total cost of milk production. As a result, regulating feed costs and/or improving feed utilisation becomes the largest single area where profits can be increased.

Feeding is the second most time consuming task on the dairy after milking tasks. Due in part to high labour costs and attempts to reduce repetitive and dull work, feeding systems have become increasingly mechanised, automated, and computerised.

Lactating dairy cows have traditionally been fed concentrates to supplement nutritional requirements not supplied by the forages.

In some installations, the amount of concentrate each cow receives at each milking varies according to her needs, while on other dairies all cows have free-choice access to the concentrate while in the parlour.

The amount of supplemental feeding depends on factors related to the cow and the feed. Some cow factors are stage of lactation, genetic potential for milk production, feeding level in relation to milk production level and heat stress among others. Factors related to feed are pasture and supplement availability along with nutrient content and substitution rate of the pasture replacement.

Using nutritional supplementation has several advantages. Nutritional supplementation optimises milk production per square miles/hectares, increases milk protein content, promotes heifer growth and when milk prices are high, supplemental feeding can increase net milk income.

Individual cow concentrate-feeding systems are rapidly gaining acceptance by dairy farmers around the world. By using automatic feeding systems you can regulate and control the total amount of concentrate consumed in a day by each cow according to her individual requirements and labour costs can be reduced. Automatic feeding systems can be installed in large or small herds and for lactating cows or growing heifers.

BouMatic offers its SmartDairy Feeding Module in two versions: Out-of-Parlour (OPF) or In-Parlour (IPF) feeding.

As the name implies, OPF stations are located outside the milking parlour and the cow can access the feeding stations whenever they want. The rule of thumb for number of feeding stations needed is one feeding station per 20-25 cows.

With IPF, the cows have access to the supplement every time they get milked. Depending on the detacher and parlour type you have, you can determine how many feeds can be fed each milking.

Features such as adjustable start time for your feed day, customisable feeding by herd, group or individual; silo monitoring content with adjustable alert levels; target feeding and adjustable feed rations are available in both OPF and IPF.

Management advancements such as adjustable feed holds by feed types, feeding stations, location, group or entire herd, are available only for OPF.

With IPF everything is happening inside the parlour so it is not applicable. New systems have lead feeding and are capable of feeding up to five milkings per day.

With lead feeding, when the cow is identified the control sends a message to turn on the auger where the cow will enter. Lead feeding can improve cow flow and parlour performance.

Using BouMatic SmartDairy software, dairy operators have multiple reports available to them, including;number of feed visits; feed overview; feed by stall; and feed exception. The feeding module software is very powerful when basic functionalities related to feeding are needed.

With feed costs constituting 50-60% of the total cost of milk production, automatic feeding systems can improve dairy profitability by controlling or reducing feed cost, improving heifer growth and maximising milk production, while maintaining healthy and high producing animals. ■

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By Denise Zygarlicke
BouMatic
Global Brand Manager

Changing the way dairy producers look at heat detection

Heat detection in modern dairies can be a challenge and dairy producers around the world are always looking for better, more efficient ways to catch cows in heat.

Visual observation of cows has long been the standard method of heat detection, but as herds grow larger and cows produce more milk, visual observation has many limitations.

Research has suggested that dairy operators observe their cows three times per day for 30 minutes each time (a total of 90 minutes per day) to maximise the potential of a visual heat detection programme.

But even when doing this, the herd heat detection rate achieved is only 65%. This means that over one third of all heats are still being missed!

To close this gap, hormone synchronisation programmes have been developed to help bring cows into heat at a scheduled time.

Protocols like OvSynch have been used on-farm for the last few decades and have achieved much success. However, synchronisation programmes can be extremely intensive and time consuming, as well as expensive.

Cows need to be injected with a certain hormone at a certain time on a certain day. If there is a deviation from this protocol, it could mean that the hormone injections will not be successful and the dairy producer will not have maximised a cow's potential to become pregnant.

Hormones also cost money, as does the labour needed to go out to the barn to give cows the hormone shots. Studies estimate that synchronisation programmes can cost around $US15 for every time that hormone protocol is used; this cost considers only hormone costs and the labour associated with giving the shots.

So how can dairy producers maintain high heat detection rates without increasing their costs? Dairy cattle activity systems may hold the answer. Activity systems are built around the principle that cattle move around more when they are in oestrus. A cow in a free stall situation can be greater than 400% more active than normal during oestrus.

Even cows that are showing no real visual signs of heat (i.e. standing to be mounted) can be detected using activity. This was shown in a recent study from the University of Wisconsin-Madison* where over 200 early lactation cows were monitored using an activity system.

Over 40% of those cows never showed an incidence of standing to be mounted, but, via activity monitoring, researchers found that these cows were cycling normally and could be inseminated.

BouMatic's SmartDairy Activity Module harnesses the latest enhancements in dairy cattle activity monitoring systems to provide detailed information about individual cow movements all day, every day.

The Activity Module uses the HeatSeeker II tags to record cow activity between milkings; the tags then transfer the information, via antenna, to the SmartDairy controller.

Producers can view the data in user friendly reports and can then utilise that data to make faster and smarter decisions about which cows to breed and when to breed them.

At dairies with the SmartDairy Activity systems installed, producers have discovered they are able to find more cows in heat and find them earlier in lactation. This means more pregnancies and fewer cows spending too much in late lactation or dry.

Many have also realised the benefits of decreased reliance on hormone protocols, not only saving them some significant expenses but also labour savings. By increasing a dairy's efficiency, the SmartDairy Activity Module can help provide bigger profits.

*Valenza, et al., 2011

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By Carolina Pinzon
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Teat care improves milk quality

The only way bacteria can enter the cow's udder and produce infection is through the teat end. Teat health is often overlooked and should be a priority in every dairy farm.

Understanding how healthy teats look and learning how to routinely evaluate teat health will improve your overall udder health.

Many factors affect teat condition and they can be grouped into three categories: milking machine, environment and infectious factors.

Teat condition is directly related to milking duration, pulsation performance and settings, liner selection, and vacuum level.

The reason unit on-time is so important is longer milking durations will have longer periods of time with low flow rates below 1kg per minute and teat end vacuum levels are higher. In addition, when cows are in low flow there are more risks of liner slips and squawks creating impacts of milk and/or bacteria into the teat end.

Low flow can occur both in the beginning of milking and at the end of milking. Poor and inconsistent udder preparation can cause over-milking at the start of milking. The main factor in reducing milking duration is a sound udder preparation routine resulting in clean, dry, stimulated teats being milked at every milking.

The vacuum level of the system, the liner type, pulsation rate and ratio, automatic cluster removal settings and maintenance are also very important factors influencing milking duration and the period of low flow below 1kg per minute.

The most common changes in teat condition are discolouration, swelling, firmness/hardness, vascular damage, wedging, ringing and hyperkeratosis. Usually teats have a normal pink colour, if after milking unit removal part of or the entire teat is red, blue or purple it may indicate congestion. Also if the teat looks swollen or has ringing of the teat base, this may indicate congestion. Congestion is the buildup of blood and other fluids in teat tissue usually caused by machine milking.

The accumulation of fluid in the teat tissue is due to the vacuum applied during the milking phase of machine milking. The massage phase, however, relieves congestion facilitating flow and removal of fluid. Hyperkeratosis is the thickening of the skin at the teat end and it is caused by extra production of keratin. Rougher teats are more difficult to clean increasing the chances of new infection rates caused by bacteria on the teat end when units are attached.

Teat condition can be assessed by visual observation and palpation of teats in the milking parlour. Evaluate changes in teat skin colour, condition and teat end roughness.

Observe teat condition on a regular basis sampling all cows if practical, or a random selection.

Check all teats of at least 25 cows in herds up to 500 cows or aim for 20% of cows to improve confidence in the results. The best way to classify teat lesions is the following four categories:

- No ring (N) – typical status of any teats soon after the start of lactation. The teat end is smooth with no cracking and no ring present.
- Smooth or slightly rough (S) – a raised ring with no roughness or only mild roughness and no keratin protruding off the ring.
- Rough (R) – a raised roughened ring with isolated pieces of old keratin extending 1-3mm from the orifice. This category indicates some breakdown in epithelial integrity of the teat end.
- Very rough (VR) – a raised ring with significant old keratin extending greater than 5mm from the orifice. The rim of the ring is typically rough and cracked giving the teat end a flowered appearance.

Conditioning teat dips with more emollient can help reduce teat end hyperkeratosis.

A teat end in good condition is an important resistance barrier to bacterial colonisation of the mammary gland. The main consequences of teat lesions are difficulty to milk because cows become uncomfortable, reduction of milking speed due to canal restriction, and increased risk for bacterial infections.

BouMatic creates value through innovative solutions to harvest the highest quality milk, gently, quickly and completely. Minimising teat health issues helps ensure gentle milking. ■

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By Jerry Slattery,
BouMatic Global
Training Director

Evaluating milking systems

Today's modern dairy facilities are designed to milk cows quickly, gently and completely two or three times per day 365 days per year.

To keep your system operating at peak performance a qualified milking machine technician should evaluate your system annually or anytime major updates are made such as the installation of a new vacuum regulator, vacuum pump, pulsators, claws, liners or detachers.

When testing a system the technician should concentrate on the milking time test as the most critical for evaluation of milking system performance.

Testing a system when static or not milking does not assure it can properly milk cows. Testing during milking assures the system is set up to milk properly.

What are milking time tests and why are they performed? The first milking time test is milk line vacuum. A technician records the vacuum in the milk line at a milk inlet closest to the receiver while cows are being milked.

The test will confirm stable milk line vacuum during milking. This test will also help identify problems with milk line slope, too many milking units per slope and vacuum regulation problems.

If the milk line vacuum test passes, the technician can move onto testing vacuum at the claw. If the milk line test fails, the technician should check receiver vacuum.

Receiver vacuum will identify why milk line vacuum failed. If the vacuum in the receiver is stable, then the technician knows vacuum issues are caused by conditions in the milk line.

If vacuum is fluctuating in the receiver the cause is related to the vacuum system.

Next the technician will measure average claw vacuum during peak milk flow. All manufacturers design liners to work at an average claw vacuum during peak milk flow.

Technicians should install a T-piece between the milk hose and claw or a 14 gauge three inch needle in the liner and record the vacuum at peak milk flow.

This critical test will provide assurance that there are no restrictions or air leaks in the milk path.

Compare average claw vacuum to the recommendations for the liner being used to make sure your cows are as comfortable as possible.

The test will also show claw fluctuation – the difference between the maximum vacuum and minimum vacuum.

This can be used to determine if hose lengths are too long or there are loops in the milk path.

Long milk hoses and loops cause more liner slips and squawks leading to increased cases of mastitis.

When checking claw vacuums technicians should pick a random sampling of above average cows or heifers and test at least 8-10 of them.

Generally, milking issues are associated with the best milk producing cows and fast milking heifers.

After collecting enough average claw vacuum data to verify the vacuum level is set correctly, the technician should graph all pulsators. Pulsators should be graphed with units attached to cows.

The graphs should be analysed to make sure all pulsators are within manufacturer's recommendations.

After graphing the pulsators the technician should finish the milking time test by simulating a falloff and recording the vacuum difference compared to receiver vacuum.

The test helps identify if the milking system has enough vacuum to support a falloff and the vacuum regulator or variable frequency drive can respond quickly to avoid vacuum fluctuation.

Technicians should also record all measurements and make recommendations to keep the milking system operating at peak performance.

Summer is coming to an end. Take the opportunity to make an appointment with your milking equipment dealer for a milking system test to be certain you are harvesting all your potential profit. ■