



Lionel's News

November/December 2016 25th edition

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Regards

Duncan Stephenson

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How a Genetic Mutation From 1 Bull Caused the Loss of Half a Million Calves Worldwide

By Lisa Howard on October 13, 2016 in Food & Agriculture

<https://www.ucdavis.edu/news/how-genetic-mutation-1-bull-caused-loss-half-million-calves-worldwide>

Holstein cattle at the UC Davis Dairy Facility. Chromosomes from a legendary bull born in 1962 account for almost 14 percent of the genome in the current Holstein population in the United States. A genetic mutation traced back to that bull, Pawnee Farm Arlinda Chief, is thought to be responsible for an estimated 500,000 spontaneous abortions in Holstein cattle worldwide. (Gregory Ur-



quiaga/UC Davis)

Quick Summary

- One Holstein bull born in 1962 has sired millions of descendants, but spontaneous abortion is a problem
- Genetic mutation found after bull's whole genome sequenced
- Tests can now be developed to avoid the problem mutation

Pawnee Farm Arlinda Chief was one of the most prolific bulls in the history of Holstein cattle breeding — but he also introduced a lethal gene into the population, responsible for an estimated half million spontaneous abortions worldwide. Now researchers have identified the mutation responsible, enabling ranchers to test for and avoid it.

Born in 1962, Chief produced 16,000

daughters, 500,000 granddaughters, and more than 2 million great-granddaughters. His sons were also popular sires. As a result, Chief's chromosomes account for almost 14 percent of the genome in the current Holstein population in the United States.

"Our discovery of a mutation that is responsible for reduced fertility is a major step toward eliminating this harmful allele from the Holstein dairy population," said Harris Lewin, senior author of the study and a professor in the UC Davis Department of Evolution and Ecology. The findings are published in the August issue of the [Journal of Dairy Science](#).



Lewin and his colleagues originally sequenced the DNA of Chief and one of his sons, Walkway Chief Mark, in 2009 when Lewin was at the University of Illinois at Urbana-Champaign

Pawnee Farm Arlinda Chief was one of the most prolific bulls in the history of Holstein cattle breeding.

In 2011, soon after Lewin arrived at UC Davis, the team was approached by scientists at the U.S. Department of Agriculture with some interesting information and a request.

Researchers at the USDA had identified a problematic haplotype (a group of genes that are inherited from one parent) on chromosome 5 of Holstein cows that was associated with lower fertility rates and embryo loss. And they had traced the haplotype back to Chief.

"They asked if we could identify possible mutations in Chief that might be responsible for the effect on fertility," said Lewin.

Lewin and study co-author Heather Adams were able to quickly identify a candidate.

"In less than 24 hours, because we'd already sequenced Chief and his carrier son, we were able to identify a 'nonsense' mutation on chromosome 5. It was a eureka moment," said Lewin.

Mutation shortens a critical amino acid chain

The mutation, which shortens an amino acid chain critical for protein-to-protein interactions, was found in a gene called APAF1, short for apoptosis peptide activating factor 1.

If a Holstein calf inherits just one copy of APAF1 from a parent, it becomes a carrier. But if it inherits copies of the mutation from both parents, the combination is fatal. The team found no animals with APAF1 from both parents among the 758 animals tested. Commercial testing of more than 246,000 Holsteins showed the same results.

The study estimates the cumulative number of Holstein calf losses over a 30-year period to be more than 100,000 in the United States and about half a million worldwide.

Insight as to why the mutation is so deadly comes from mice. Previous studies show that mutations affecting the function of APAF1 cause fetal mortality in mice by affecting the development of the central nervous system. The severely shortened APAF1 peptide has the effect of making the genes inoperative because the critical piece is in the truncated portion.

"We are very confident that the APAF1 stop-gain mutation is the cause of fertility loss in Chief's lineage," said Lewin.

Holstein breeders will be able to test for the potentially fatal mutation

A single midterm abortion could cost a dairy about \$800. Worldwide, the loss from the APAF1 mutation over the past 35 years is estimated at about \$420 million.

Dairy cattle are under intense selection for traits such as milk yield and fat content. Because of this, breeders rely heavily on the use of artificial insemination, but this has increased inbreeding in the national herd, which escalates the frequency of recessive lethal genes like APAF1 in the population.

Breeders can now use diagnostic tests for the APAF1 mutation to avoid mating two carriers while still retaining the beneficial genetic contributions derived from Chief, which are estimated to be about \$30 billion in increased milk production.

“The cost of sequencing has dropped to the point where it is now cheaper to sequence and interpret a whole genome than it is to genetically map a trait by traditional methods. Just as rapid, low-cost genotyping revolutionized dairy cattle breeding, so too will whole-genome sequencing be used to increase the accuracy of sire and dam selection,” said Lewin.

A recent USDA report estimates the number of milk cows in the United States at 9.32 million. Milk production in 2015 totaled 209 billion pounds, with the annual rate per cow at 22,393 pounds. Cash receipts from marketings of milk during 2015 totaled \$35.7 billion.

Collaborators and funding

The research was supported by USDA Agricultural Research Service CRIS projects. GeneSeek-Neogen Corp. of Lincoln, Nebraska, provided supporting genotype data.

Co-author Heather A. Adams of the University of Illinois at Urbana-Champaign is now at CRI International Center for Biotechnology in Wisconsin. Additional authors include: Tad S. Sonstegard of the Animal Improvement Programs Laboratory, Agricultural Research Service, Beltsville, Maryland, now at Acceligen, a subsidiary of ReWcombinetics, St. Paul, Minnesota; Paul M. VanRaden, Daniel J. Null, and Curt P. Van Tassell of the Animal Improvement Programs Laboratory, Agricultural Research Service, Beltsville, Maryland; and Denis M. Larkin of the Department of Animal Sciences, University of Illinois at Urbana-Champaign, now at Royal Veterinary College in London.

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Media Resources

- [Read the paper \(Journal of Dairy Science\)](#)
- [Related: Genomes of two champion bulls sequenced](#)

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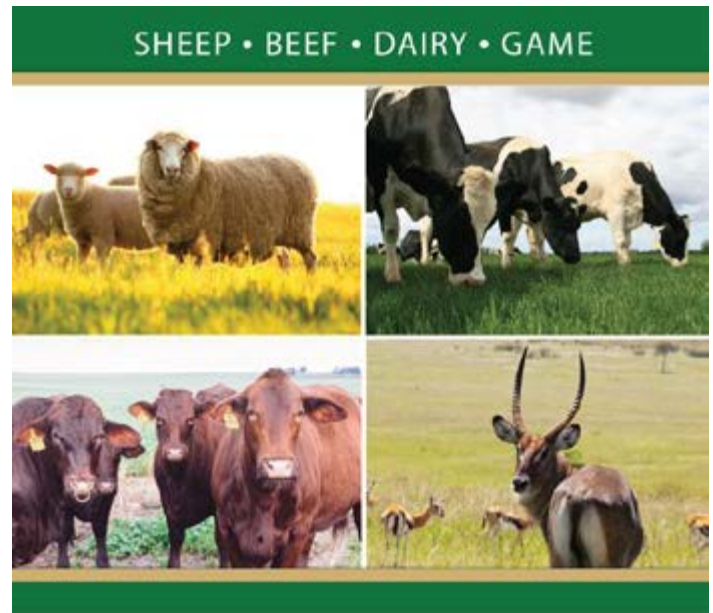
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Local pork industry not much affected by swine fever in SA

June 30, 2016

<https://www.newera.com.na/2016/06/30/local-pork-industry-affected-swine-fever-sa/>

by Deon Schlechter

Windhoek

Namibian producers were yesterday reassured that the recent outbreak of African swine fever in South Africa will not have a severe impact on the Namibian market as Namibian producers deliver more than 70 percent of pork to the local market.



Vice-chairperson of the Namibian Pig Producers Association William Bosch told New Era at a members' meeting and information day in Windhoek yesterday that the borders are expected to be closed for South African pork products for at least six months.

"Consumers can expect less pork products on the shelves in days to come but we don't foresee a shortage. We are geared for what is to come," he noted.

African swine fever resulted in the immediate suspension of the importation of live pigs and raw pork from South Africa on June 14 until the outbreak is adequately resolved.

Acting permanent secretary of the agriculture ministry Sophia Kasheeta assured that surveillance activities at the official border points have been increased to ensure that products entering Namibia do not pose a level of risk for the local pork industry.

At yesterday's meeting it transpired that there has been an increase in pig farming with more farmers showing interest after the recent introduction of a trial pig protection scheme. This has resulted in local producers now producing up to 70 percent of all pork in the Namibian market, while the rest is imported mainly from South Africa.

Commercial farmers were reminded of the importance to keep up with the latest technology regarding floor construction, heating and waste handling and it was recommended that farmers on any level invest in pig feeders.

"Pig feeders have become the trend in Europe and it delivers huge returns. It reduces the number of labourers and secures higher income for those involved," the meeting was told by Duncan Stephenson of Lionels Veterinary Suppliers in South Africa.

He explained that South Africans consume less than 4kg of pork per person per year, while in Germany people consume more than 53kg of pork every year.

Stephenson is of the opinion that pork production will play a major role in the meat industry in the years to come.

"The trick will be to produce more pork with less fodder as prices keep skyrocketing in times of drought," he observed.

Pig farming in Namibia is still very much a family set-up. Whether it is in a remote communal area or on a more commercial scale, pig farming has traditionally stayed within the family or community. But things are changing fast and with the infant protection the industry is receiving in Namibia, pig farming is growing in all areas. It is now accepted that it is not economically viable to farm with less than 250 pigs in the commercial market.

The importance of farmers identifying markets for their animals and paying careful attention to their start-up capital was stressed.

Slow growth is experienced in the local pork market and new producers were welcomed and assured that there is a place for small-scale farmers as they are in a position to supply a niche market.

The Namibian pig industry is still facing big challenges despite the protection it enjoys from the government.

It was also acknowledged as a very important industry for Namibian communal, emerging and commercial farmers, and that the pig industry has a big role to play in the agriculture sector as it is part of ensuring food security.

The Meat Board introduced the Pig Protection Scheme at the end of 2012 on a trial basis to promote and protect local pig producers. Through the scheme, the Meat Board worked out a formula for pork prices, which fluctuates on a monthly basis.

There are about 600 pig producers in the country, while more than 500 of them are very small farmers, some even with only three to ten pigs. Pig producers can be found all over the country but mostly in areas where there are plantations such as maize where pigs can be fed. None of the pigs or pork produced locally is exported.





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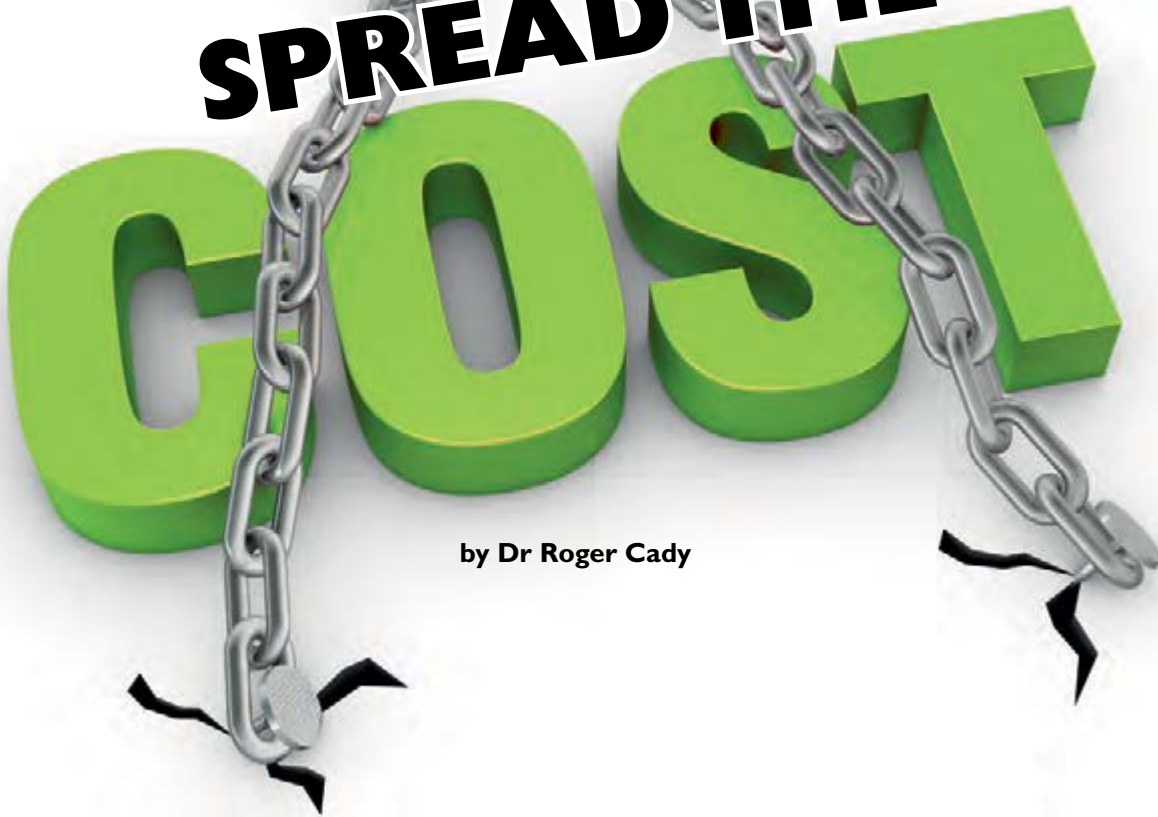
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SPREAD THE



by Dr Roger Cady

Meat, milk and eggs are the primary sources of high-quality protein in a healthy diet for much of the world; yet production practices for these vital food sources face a dual challenge. A growing population, including a growing middle class, coupled with urbanisation, are all causing increases in the demand for animal protein, according to the FAO. At the same time, animal production is under attack and is challenged to freeze or reduce its environmental footprint.

These apparently paradoxical challenges seem intractable; hence the calls to reduce or remove animal protein from the diet. On closer inspection, however, this last resort is unnecessary.

Clearly, diets with excessive protein and waste need to be curtailed. However, while such efforts

will help close the gap between current animal protein production capacity and forecasted demand, they are not sufficient. Initial indications are, at least for some species, that there is capacity to produce more with less and thus freeze and in fact reduce the environmental footprint of animal production

and meet the forecasted demand. There are only two options for increasing supply at the farm gate, namely, increase the number of animals or increase productive efficiency; the latter by increasing yield per animal or reducing time to market, depending on species and product.

Adding animals to meet demand is not a satisfactory solution because every additional animal increases the environmental impact. Production efficiency needs to be improved to support the growing demand for agricultural products. The effect is to spread fixed costs over more units of production. While animals are not factories, the same concepts of efficient production apply. In the animal world, this concept is called “dilution of maintenance”.

Maintenance is an overhead nutritional requirement that must be met before any non-obligatory productive functions (growth, reproduction, lactation) can be sustained. If not, body reserves are mobilised. Once maintenance requirements are met, nutritional intake can be used for productive activities. This is no different than what occurs in human nutrition. If growing children, nursing mothers, or athletes have limited nutrition available, they do not continue to grow, provide milk, or perform because the body puts priority on providing nutrients for survival.

DEFINITION:

MAINTENANCE

= the obligatory nutritional requirements needed for healthy survival at basal metabolism.

Primary factors affecting maintenance requirements are size, gender, physical activity level, health status, and ambient temperature.

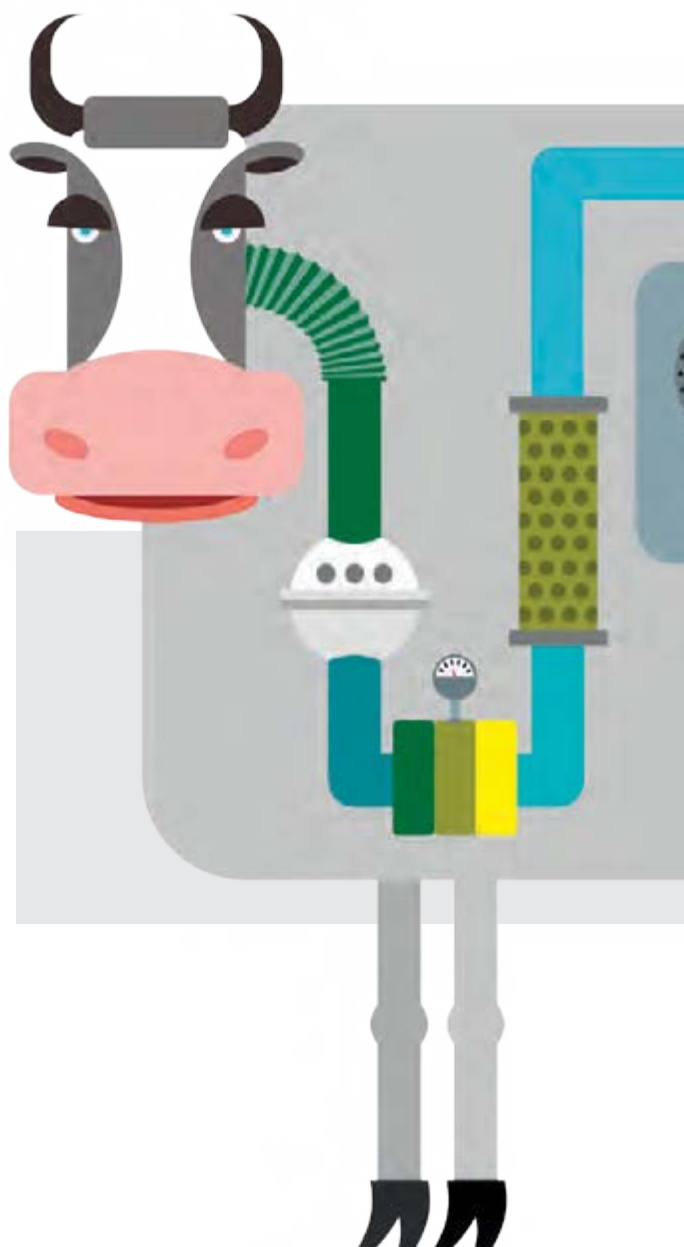
Animal production is not mysterious and follows three simple biological and physical laws:

1. First Law of Thermodynamics

Energy can neither be created nor destroyed, it can only change form. The consequences of this law of physics means a low-input system cannot be a high-output system, although a high-input system could be a low-output system if there is a high level of waste.

2. Carbon is the energy currency of living things

Unlike machines in which we may substitute the burning of fossil fuels as an energy source with solar, wind, nuclear, or hydro power, living things depend upon the transfer of carbon for energy. Therefore, a food system cannot be carbon-free.



3. There is a hierarchy in the utilisation of nutrients

Unlike machines in which we can design and alter the flow of energy within the machine, such as in a tractor diverting energy to the wheels, lights, or hydraulic system as we control the machine, nutrients within a living being are hard-wired to be partitioned in specific ways. The obligatory function of survival always takes precedence over any non-obligatory function, including growth, lactation and reproduction. Therefore, there is a mandatory overhead resource cost of keeping an animal alive that must be met before any nutrients are used for productive functions. The consequence of this is that if we reduce feed intake, it will typically have a negative effect on production efficiency.

FOR EXAMPLE

A 600 kg dairy cow requires 9 kg of feed per day for survival, and milk production requires 0,4 kg of feed per litre of milk produced. Given these requirements, we will compare two 600 kg cows; one giving 10 ℓ and the other 20 ℓ of milk.

10 ℓ-cow

Feed requirement = 9 kg feed for survival
+ (0,4 kg × 10 ℓ) =
9 kg + 4 kg = 13 kg/day
Production = 10 ℓ/13 kg = 0,77 ℓ/kg
feed
Maintenance feed = 9 kg/13 kg = 69% of
intake

20 ℓ-cow

Feed requirement = 9 kg feed for survival
+ (0,4 kg × 20 ℓ) =
9 kg + 8 kg = 17 kg/day
Production = 20 ℓ/17 kg = 1,18 ℓ/kg
feed
Maintenance feed = 9 kg/17 kg = 53% of
intake

The comparison of these two percentages represents the dilution of maintenance.

Make the most of the advantage

Taking advantage of dilution of maintenance does not mean we should not be taking advantage of other methods of meeting the demand for milk such as reducing waste and improving animal health. We certainly should not incur increased milk demand at the expense of lowering the environmental footprint of milk production.

DR ROGER CADY is the global sustainability lead of the Elanco Scientific Affairs team. Contact him at cady_roger_a@elanco.com for more information about this article. 



UDDER PREP *innovation*

As labour costs and employee turnover continue to soar, farmers across the globe are looking for ways to streamline the milking process. Farmers in South Africa can now automate their udder prep routine with the FutureCow® Teatscrubber.

This advance in efficiency and consistency in udder prep procedures has led to the FutureCow® Teatscrubber receiving the second place in the 2016 TDM Innovation Awards. Each year, these awards recognise companies and products that produce technological solutions that assist South African dairy farmers in improving their efficiency. Introduced to the South African dairy market by Lionel's Veterinary Supply, the Teatscrubber helps farmers increase the efficiency of important pre-milking procedures and cuts down on product waste. The automated udder prep system cleans, sanitises, stimulates and dries teats in one easy step, allowing farmers to reduce their pre-milking teat dip consumption and labour cost. "We see farms with high turnover rates being able to train a new milker in less time and with more consistency than with traditional prep training", says Angelina Bertino, FutureCow® marketing manager. Consistency in prep procedures also helps to improve production by increasing milk flow rates and decreasing milking times. "With this system, the farmer knows that each teat on every cow is cleaned the same way every time", says Bertino. The improvement in teat cleanliness also has added benefits for milk quality and udder health. Many farmers using the Teatscrubber have seen lower somatic cell counts and fewer mastitis cases in their herd.



TDM
innovation
awards 2016



The Dairy Mail congratulates the Lionel's Vet team, Johan Botes, Carli Nel and Warnich Biersteker, on their second place in this year's TDM Innovation Awards.

The Dairy Mail would like to commend everyone who entered the Innovation Awards this year, with a special word of congratulations to GEA for walking away with the trophy for their Mlone milking system. This competition is growing every year, and we are proud to be associated with companies that are investing in technology in order to make dairy farming easier, and more profitable.

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'Tina the Turner': UK's first cheese-turning machine saves family firm flipping 5,000 heavy cheddar wheels

<http://www.telegraph.co.uk/news/2016/11/02/tina-the-turner-uks-first-cheese-turning-machine-saves-family-fi/>

The custom-made equipment picks up the 25kg cheese wheels before brushing off excess mould and turning them over - sparing staff the back-breaking task CREDIT: PHIL YEOMANS/BNPS

Telegraph Reporters

2 November 2016 • 12:21pm



A dairy farm has become the first in Britain to employ a robot to turn its award-winning cheddar cheese, in a move that it says will ensure the firm's future.

The custom-made machine cruises the aisles of the huge cheese store of Westcombe Dairy in [Somerset](#) to upend 5,000 wheels of cheddar stacked 12 shelves high.

The equipment picks up each lump before brushing off excess mould and turning them over - an operation considered a crucial part of the [maturing process](#).

The company has been here for 100-odd
years and we want to be here for another
100 - this is a way of ensuring that

Tom Calver

Until now, the arduous job had been carried out by staff at the farm who took it in turns to spend a few hours a week turning the [cheese](#), with each wheel being moved once every few months on average.

But the new machine - nicknamed Tina the Turner - can turn 100 25kg wheels every hour and now each one is upended once a week.

Not only does the robot save staff time and their backs, it also helps give the cheese a tastier flavour.

The robot was bought by father and son team Tom and Richard Calver, who had become weary of the manual labour required to turn the cheese.

The machine was custom-built by a cheese turning machine manufacturer in Switzerland, which spent three years modifying one of their Comté turning appliances.

It is the first time that one has been converted to turn cheddar cheese.



The machine, nicknamed Tina the Turner, was custom-built by a manufacturer in Switzerland CREDIT: PHIL YEOMANS/BNPS

Tom said: "Turning cheese is an incredibly mundane job and you don't come across too many people who aspire to be a cheese-turner.

"When you turn a cheese over you need to brush it and Hoover it - there is nothing artisan about doing that job, it is back-breaking work.

"The introduction of 'Tina the Turner' has improved our operation massively, not just in terms of efficiency but also flavour because the mould on the cheese can be properly controlled.

"Our wheels would get turned once every couple of months before, now it's every week. The company has been here for 100-odd years and we want to be here for another 100 - this is a way of ensuring that."

He added: "There were already machines for turning European cheeses like or Parmesan but none for cheddar.

"We worked with a cheese turning robot company from Switzerland, which modified one of their Comté machines for our needs.

"The whole process took about three years. While I won't say exactly how much the robot cost it was a lot of money, the price is comparable to that of a tractor."

Tina the Turner operates in Westcombe Dairy's new store built into a hillside near Shepton Mallet.

Cheese matures better when it is stored underground, due to the temperature.

The family-run business, which produces 120 tons of cheddar each year, sells to cheesemongers, wholesalers and supermarkets including Waitrose.

Jerseyland Dairy identifies five keys to reproductive success

<http://www.progressivedairy.com/topics/a-i-breeding/jerseyland-dairy-identifies-five-keys-to-reproductive-success>

Progressive Dairyman Editor Peggy Coffeen Published on 24 August 2016

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At Jerseyland Dairy LLC, dairy manager Tanner Schmidt knows a solid reproduction program depends on more than just shots and semen; it comes down to having the right people in place, doing the right things at the right time.

Whether that is a breeder, feeder, hoof trimmer or herdsman, each makes a valuable contribution to the overall goal of getting cows bred. The 3,500-cow Jersey dairy located near Sturgeon Bay, Wisconsin, has improved fertility by making changes to their protocols and assembling an effective, committed team.

"We bumped conception rate by 9 points in the last year-and-a-half," Schmidt says, noting that first-service conception rate for cows now runs between 38 and 41 percent. "With good people, it's easy to achieve our goals."

One of the most recent additions to the farm's team is Kevin Fehl, an experienced dairy manager whose knowledge and skill with both people and cows has helped raise the bar for reproduction. The dairy also brought on a full-time veterinarian, Dr. Kayla Williams, who assists the repro team by using ultrasound to pregnancy check cows at 36 to 43 days after breeding.

The dairy's breeding protocol includes a combination of tail-chalking and synchronized A.I. breeding. Last year, they started giving a second prostaglandin shot, prior to the first service, which has yielded positive results. "That bumped our conception 5 points," Schmidt adds. "It helps clean them up. The breeders are telling us the cows are cleaner and feel better."

On the first three services, all cows are inseminated with sexed Jersey semen; after that, they are bred to a Limousin cross. The low market value of Jersey bull calves drove the dairy's decision to focus on increasing the female population. Schmidt and Fehl identify five key components to their successful reproduction program:

1. Have the right people on the repro team. Schmidt and Fehl agree that a successful breeding program is a direct reflection of compliance, and that's why they have assembled a team of dedicated and trustworthy individuals to handle this important job. One positive change they made was assigning one person to administer all of the gonadotropin-releasing hormone shots, as opposed to holding multiple people responsible for the task. "It's made a huge difference," Schmidt acknowledges.

"We have one person we trust doing it, and he does really well." Now, instead of employees point-

ing fingers and passing blame if something goes wrong, one worker is held accountable. "If it's not done, it's that one person's responsibility," Schmidt adds.

Dependable and reliable breeding technicians from the dairy's genetics company are also a valuable part of the team. They have seen better results from synchronized breedings by communicating with the breeders and making certain that insemination takes place within the correct time frame of the gonadotropin-releasing hormone shot.

The managers monitor each technician's numbers during the weekly herd checks using a code in their dairy record-keeping software.

2. Nutrition. The dairy made changes to the feeding program in the past year that have improved overall cow health and ultimately impacted reproduction. "We switched from a really high-concentrate diet to a forage diet," Schmidt says. "We've got a much healthier herd now." Changes made particularly to the dry cow and transition cow rations have helped fresh animals get their lactation off to a better start and, consequently, reproduction too.
3. Hoof health. Fehl believes a sound set of feet lays the foundation for a cow's performance. "We've got to set her up for success," he states. That means making sure each cow sees the hoof trimmer twice a year – once during the dry period and again during lactation. Heifers are trimmed prior to freshening on an as-needed basis.

All cows and heifers go through a footbath regularly, including dry cows two to three times each week. Grooved floors provide cows with traction, which is especially important because the dried manure solids used for bedding can create a slippery surface.

4. Good facilities for handling and cooling cows. Schmidt recognizes the importance of efficiency when working with cows, and well-designed facilities makes this attainable. Being able to move cows easily and lock and unlock them quickly during shots, tail chalking, breeding or herd checks helps to optimize the time budget for rest.

"Every extra hour of a cow sleeping is 2.5 pounds of milk," he says. Fehl adds that the goal is to not have any cow locked up for more than 40 minutes at a time. In fact, he strives for most of the cow work to be done within the 20- to 25-minute window when they are eating at the bunk after milking.

Schmidt and Fehl see the benefits of cooling as well. Tunnel ventilation effectively drops the temperature in the barns, even on the hottest days. In this environment, cows continue their normal daily activities instead of standing or clumping.

5. Genetics. The managers at Jerseyland Dairy believe good genetics are important, and so is a company that stands behind them with breeding technicians and technical service people. "We want a cow that is going to live for a long time and be productive," Schmidt explains.

Good feet and legs, fertility and longevity are other key traits of the kind of bulls they use, Fehl notes. "What we want to breed are trouble-free cows," he adds.

Though they have made significant improvements to their reproduction program in the past couple of years, Schmidt and Fehl have more goals in mind for the future. One of those is to eventually reach a 30 percent pregnancy rate.

Currently, they hover around 24 percent with only a 40-day voluntary waiting period. There are plans to add more training for the repro team through regular meetings and sharing numbers and benchmarks on a routine basis. PD

PHOTO: The skilled repro team at Jerseyland Dairy includes (L-R) Marlon Perez, Dr. Kayla Williams, Craig Redeker, Arturo Colorado, Kevin Fehl, Dolvin Rodriguez and Tanner Schmidt. Photos by Peggy Coffeen.

Trace minerals for reproductive success in SOWS

http://www.allaboutfeed.net/Feed-Additives/Articles/2016/10/Trace-minerals-for-reproductive-success-in-sows-2902338W/?cm-pid=NLC%7C%7Callaboutfeed%7C2016-10-21%7CTrace_minerals_for_reproductive_success_in_sows

Copper, zinc and manganese are the 3 trace minerals most demanded by sows. Feeding the right amounts of these minerals is essential to the longevity and reproductive success of sows.

Second to reproductive failure, sow lameness is the next reason sows are culled from herds. An average of 30-35% of sows in any given herd experience lameness. Producers should target that number to be just 10% of their herd. Early culling of sows also cuts into profits. This is due to potentially decreased farrowing rate, smaller litters and limited progeny performance, which are all traits linked to early parity sows.

Mike Hemann, swine account manager at Zinpro Corporation, agrees on the importance of decreasing turnover in the sow herd. “We know that a sow must reach her fourth parity to realise her economic potential,” he says. “By working to decrease lameness in the sow herd, we can increase the longevity in sows and, in turn, can see more sows reach their economic potential.”

Healthy sows perform better

As with any animal, when pigs feel their best they show it through their positive performance. “Sows that are healthy and not lame are getting up and going to the feeder,” Hemann says. “They are maximising feed intake, providing the proper nutrients to their gestating litters and piglets throughout the gestation and lactation periods, respectively.”

One indicator of good sow performance is low somatic cell counts. Trials at Zinpro Corporation have concluded that sows fed the proper amounts of copper, zinc and manganese trace minerals experience lower somatic cell counts. Hemann notes, “this is tied directly to the white blood cell count in the sows. They have less inflammation and are overall healthier. This can lead to improved performance in both the sows and pigs.”

Photo: Bert Jansen

Recognise foot challenges



Several kinds of lesions can impact the health of a sow. Keeping a close eye on the overall sow foot health is imperative for producers. Watch for these foot lesions in your herd:

- **Toes** slightly longer than normal can eventually impact sow gait when walking.
- Improper **dew claws** can be slightly longer than normal and can even extend to the floor surface when the pig is standing. They can also be torn or completely missing.
- Sows experience **heel overgrowth and erosion** when there are cracks and overgrowth and/or erosion in the soft heel tissue.
- **Heel-sole crack** occurs when there is a separation at the juncture of the heel and sole.
- **White line** is visible when a separation occurs along the white line of the foot.
- **Horizontal wall cracks** are evident when a hemorrhage is visible and when there is a horizontal crack in the claw wall.
- **Vertical wall cracks** occur when there is a vertical crack evident on the claw.

Many of these foot lesions can be caused by a nutritional deficiency or imbalance and can help be prevented by properly feeding the correct amounts of the trace minerals most needed by sows- copper, zinc and manganese. The use of these minerals at the right levels helps to optimize lifetime herd reproductive performance.

A closer look at the minerals

Manganese is essential for healthy joints, tendons and overall bone density. Zinc aids in wound healing and helps with corium health. Copper is needed for strong connective tissue and white line health. Copper and zinc also are crucial in a sow's diet for sole, heel and horn strength and elasticity. Purina Animal Nutrition launched the Feeding for 30® program www.Feedingfor30.com in 2012 with the goal of sharing nutrition and management advice and research to help the industry move toward 30 piglets per sow per year. The industry-wide initiative now includes partnerships with Zinpro Corporation and DSM Nutritional Products.



[Emmy Koeleman](#)

Editor: All About Feed & Dairy Global

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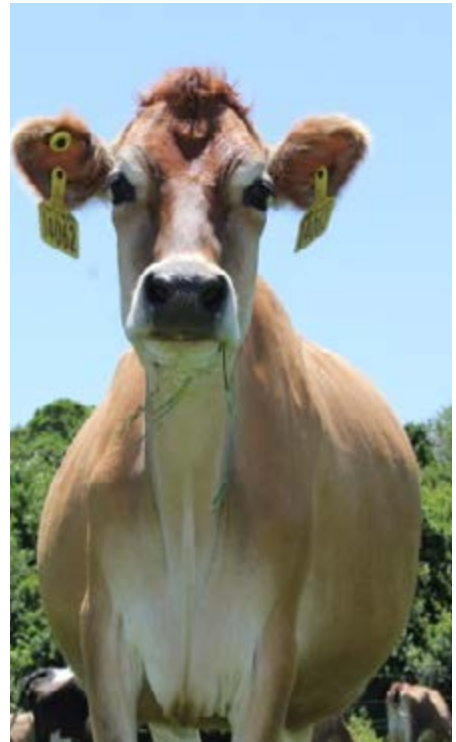


Ecomatic Reg No.: L8003 Act 36 of 1947 Namibian Reg No.: N-AR1222 Active Ingredients: Pyrethrum 15g/kg, Piperonyl Butoxide 150g/kg (Caution)
Nimbus Reg No.: L8012 Act 36 of 1947 Namibian Reg No.: N-AR1215 Active Ingredients: Pyrethrum 5g/L, Piperonyl Butoxide 40g/L (Harmful)
Snap Reg No.: L8395 Act 36 of 1947 Namibian Reg No.: N-AR1214 Active Ingredients: Methomyl 10/kg, (Z)9 Tricosene 1g/kg (Caution)
Delta 7WP Reg No.: L8605 Act 36 of 1947 Namibian Reg No.: N-AR1219 Active Ingredients: Deltamethrin 70g/kg, Piperonyl Butoxide 350g/kg (Caution)
Synmatic Reg No.: L8932 Act 36 of 1947 Namibian Reg No.: N-AR1530 Active Ingredients: D'Phenothrin 10g/kg, D'trans Allethrin 2g/kg, Piperonyl Butoxide 120g/kg (Caution)

Synvita endorses the use of SAPCA members for services related to Pest Management and Fumigation.

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We would like to welcome Jacquie Pastor as part of the Companion Team. Jacquie is working in the Gauteng area.

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