

Red Veal Costs Producer Thousands. Water Chlorination Cures the Problem.

"We were being docked anywhere from \$1000 to \$1200 for color," says veal producer Ed Cardinal of Vincennes, Indiana. After six years of successful operations, Ed and his family could not get top dollar from the local packers for their calves. Instead of the high-quality white meat they had been used to, the Cardinal's stock was coming up red.

Ed says he tested the well water and the tests showed it to be fine, at first. Water is an easily overlooked source of problems for animals, but he and his father were aware of some dissolvable iron in the water when the well was originally put into service. Until the red veal showed up, water softening had been enough to handle the situation.

Subsequent tests revealed a serious concentration of iron bacteria in the well. "The water was plum red," says Cardinal. During the earlier tests, apparently not enough time had been allowed for the color to appear.

Problem Is Treated Right At The Well

When he started checking around, Cardinal was told it would be necessary to chlorinate the water inside his barns to solve the iron problem. That solution will not work, "because of the time it takes to kill the bacteria," he says, "we can't do that." The Cardinals have a herd of 700, with 600 in stalls and the rest in loose housing.

Instead of end-point chlorination in the barns, the Cardinals chose to treat the problem directly at its source. They installed an Autotrol® brand Land-O-Matic™ dry pellet chlorinator made by Osmonics.

The Land-O-Matic chlorinator automatically dispenses concentrated chlorine pellets straight into the well, at controllable rates. The dispenser holds 5 to 15 pounds of pellets, enough for extended use between refills. In addition, unlike liquid chlorine, pellets avoid problems with fumes, splashing and chemical loss due to evaporation. The pellets are approved by the EPA for sanitizing well water.

Because chlorine kills bacteria and provides a residual that prevents recontamination, it is used in 96 percent of the world's water supplies. For the veal producer,

since the water is treated in the well, the entire water system is protected, from the well to watering cups, nipples, and troughs, right up to the household faucets. Chlorination also eliminates iron clogging of pumps.

After they began chlorine treatment, Cardinal explains, "It was unbelievable what we pumped out of the well. It was just pure rust. It's no wonder we had the problems we had with the calves. We were just feeding them iron every day."

Chlorination Provides Healthier Herds

Since using the Land-O-Matic chlorinator, Cardinal says his herd's death loss rate is no more than one percent. In addition to eliminating iron bacteria from the water, the chlorinator also reduces or eliminates coliform, nuisance bacteria, virus cells, hydrogen sulfide, algae and slime.

Chlorinated water also reduces stress in animals and allows for better feed conversion with reduced mold and toxic reaction in the digestive tract.

In particular, Cardinal notes that the herd's scour rate has dropped. Before the chlorination, the Cardinals had to keep treating affected calves.

He thinks the reason for the prolonged treatments were due to continuously feeding the calves bacteria in the water.

Because herds are healthier, chlorinated water results in less need for medications and drugs, enhancing overall profitability for veal producers.

System Pays For Itself Quickly

Cardinal says the Land-O-Matic chlorinator paid for itself with his first group of calves. Yield and grade were such that he wasn't docked at all. And those \$1000 to \$1200 losses remain a thing of the past. The whole cost of the system may be expensed for farm use.

He says "If you go to a packer and ask where his best colored calves come from, I think you'll find that they are on city water, county water or some water that's been chlorinated."

Raw Water Dilutes Turkey Farm Profits. Chlorination Adds \$\$\$ to Bottom Line.

At a turkey finishing farm in Minnesota, a problem common to turkey farms everywhere was costing the owners thousands of dollars a year in unrealized profits. Fortunately, the problem was easy to reverse. With the solution came several other benefits as well.

E-Coli Bacteria Is Culprit

Manager Randy Olsen explained that E-coli bacteria in the water fountains was a major source of bird mortality—about 18,000 in a hatch of 200,000, a 9 percent mortality rate. E-coli also contributed to leg problems, the largest single reason for culls at the farm.

To solve the E-coli problem, Olsen recommended the installation of an Autotrol® brand Land-O-Matic™ dry pellet water chlorinator manufactured by Osmonics.

Mortality Rate Reduced

The Land-O-Matic chlorinator holds up to 15 pounds of concentrated chlorine pellets and automatically dispenses them directly into the well at a controllable rate. In tests conducted by Olsen, he maintained the chlorine residual between 3.5 and 4.0 ppm.

The mortality rate was reduced to fewer than 16,000 turkeys per hatch, an improvement of about 1.0 percent, or an additional 2,000 birds going to market with each hatch. The number of culls and packing plant condemnations was also reduced, by an average of 0.50 to 0.75 percent.

Healthier Birds, Plumper Profits

Along with the reduced bacteria, the farm's worming operations were also favorably impacted. Before chlorination, worming was performed at 10 weeks, 13 weeks and 16 weeks of age.

Poults were typically brought to the farm at 7 weeks and sent to market at about 19.5 weeks.

On chlorinated water, posting at 13 and 16 weeks did not reveal any worms, reducing the need for worming medications from three applications to just one.

Birds also averaged weight gain improvements of between 0.25 and 0.75 pound, compared to non-chlorinated birds, Olsen said. Finished weights averaged approximately 23.25 pounds. Feed conversion costs ran 2.92 pounds of feed per pound of bird.

Labor Savings Also Realized

With cleaner water throughout the system, the fountains also required much less cleaning time—only one-fourth as much, according to Olsen. The amount of cleaning solution needed was also cut by more than 50 percent. Plus, less time was needed for tilling and rebedding because litter remained dry.

System Paid For Itself With First Hatch

With the increased income and various sources of savings, the first hatch easily paid for the Land-O-Matic system and a full year's supply of pellets several times over, Olsen said.

Total bottom line improvement, including livability increases, reduced medications, improved feed conversion and added weight gains amounted to \$0.023 per bird, \$4,600 per hatch or approximately \$13,800 per year. In subsequent tests, similar results were achieved.

Chlorination Protects Entire Water System

Treating a bacteria problem at its source eliminates the need to repeat the process in separate buildings. It also protects the entire water system, from the well to watering cups and right up to household faucets.

In addition to controlling E-coli, chlorine also eliminates iron bacteria from water and eliminates or reduces coliform, nuisance bacteria, virus cells, hydrogen sulfide, algae and slime. It also helps prevent recontamination and iron clogging of pumps.

Use of dry pellets has its advantages over liquid chlorine. There are no noxious fumes, no splashing, no staining of clothes, and no chemical loss due to evaporation.

Dairy Producer Churns Out Richer Profits, Healthier Herd With Chlorinated Water.

Although he was milking an average of 45 to 50 cows on his Geneseo, New York dairy farm, Keven Niedermaier suspected he wasn't pulling quite the profit he could have been from his operation.

And the culprit was as clear as unchlorinated water.

"High concentrations of E-coli and other bacteria in our well water were keeping our milk quality down," Niedermaier explains. "In fact, due to high somatic cell counts of 400,000 or more, we were only being paid \$10 per hundredweight of milk."

"Iron and iron bacteria were constant problems, too, beginning right in the well with the submersible pump," Niedermaier continues. "The impellers were regularly becoming clogged with iron bacterial deposits, reducing pump efficiency. Iron problems were evident all up and down the water supply lines...in the drinking cups, in the barn, in the milking parlor, in the fixtures in our family home. Even our clothing would come out of the wash stained."

Contaminated Water: A Common Concern

The problems experienced on the Niedermaier farm are typical of those found on dairy operations that must contend with untreated water.

Various contaminants...in the form of E-coli, parasites, viruses, algae, fungi, spores and iron bacteria...can combine and incubate in the well, very often producing a foul-smelling, unsafe, scummy, unpalatable livestock water. This can give rise to a broad array of waterborne livestock problems, ranging from E-coli bacteria infections to intestinal parasites to unacceptable bacteria counts in milk.

In addition, many types of iron-precipitating bacteria combine with iron and nutrients in natural ground water to form a bio-fouling mass called iron bacteria. Although harmless to humans, iron bacteria can plug pumps, wells and entire water systems.

Curing Contamination Right At The Source

To remedy the situation on the Niedermaier farm, an Autotrol® brand Land-O-Matic™ dry pellet chlorinator, manufactured by Osmonics, was installed directly on the well.

The easiest user-operated chlorinator available, the fully adjustable Land-O-Matic chlorinator dispenses safe, convenient, EPA-registered, dry chlorine pellets one at a time.

The unit holds up to 15 pounds of pellets, enough for an extended period of time, in an above-ground dispenser that's easy to refill.

Chlorinating water in this way - right at the source - protects the entire system, from well to watering cups

to household faucets. It also saves the expense and labor of installing an elaborate end-point chlorination system at each water outlet.

The Most Effective Way to Chlorinate

The benefits of deep well dry chlorination are many.

Dry chlorine pellets penetrate to the bottom of the well for maximum potency. Besides killing bacteria in the well, the chlorine acts continuously to provide a residual that prevents recontamination of the water supply downstream. It also dissolves existing iron bacteria deposits and prevents further formation by killing the bacteria and precipitating the iron which can then be easily filtered from the water.

When livestock has safe, palatable drinking water, such as with dry pellet chlorination, dairy farmers are able to enhance milk production. Bacteria counts, scour incidents, stress levels, many infections and diseases are reduced in the process.

A 150% Boost In Milk Checks

With the Land-O-Matic chlorinator on line at the Niedermaier farm, improvements came quickly and dramatically.

Somatic cell counts dropped below 200,000 and bacteria rates were too low to measure. The resulting better quality water and stronger, healthier cows raised the Niedermaier farm's milk quality to the highest premium level possible, which paid a full \$25 per hundredweight.

Since its installation, the Land-O-Matic chlorinator has maintained a constant chlorine residual level of 2.0-2.25 ppm in the Niedermaier water system. Iron and iron bacteria problems have been eliminated, and even the herd's mastitis problems have improved.

First Payback in Mere Months

"And the Land-O-Matic chlorinator paid for itself in less than one year," adds owner Niedermaier. "We've realized substantial savings on cleaning supplies for the milking parlor, for the drinking cups in the barn, and for our home. And we've spent less time and effort on cleaning and maintaining the system."

"To me, though, the biggest plus of the Land-O-Matic system is not that it raised milk checks from \$10 to \$25 per hundredweight right after it was installed," Niedermaier says, "but that after a year's time it still keeps bacteria at a constant low level. This is most important."

"It only makes sense that the better the quality of the water, the stronger and healthier the herd, and the cleaner the overall operation" he concludes. "It all works together."

No Magic To Better Hog Production. But Better Water Can Work Wonders.

Too often, hog producers rely on veterinarians as magicians or miracle workers to solve problems and improve productivity, says Dr. D. Peter Firth. "There really is no miracle cure." But there is a good deal the hog farmer can do to cure problems before they occur and to boost production.

Dr. Firth is a veterinarian and co-founder of the Firth Animal Hospital in London, Ontario. He believes that better, more businesslike animal management is the key to improved production. An important part of the process includes managing the animals' drinking water.

Dr. Firth says he frequently encounters an attitude that says, "Animals can drink any water with little or no bad side effects." He says this is unfortunate because he has conducted studies that strongly contradict that assumption.

28 Pigs Per Year Per Sow Possible

Based on his findings, Dr. Firth believes monitoring and treatment of drinking water, as part of a total management program, can make a significant contribution to improved hog production. In fact, he says it's not unrealistic to set as a goal as many as 28 pigs per sow per year.

"There are still a lot of people around who are doing only 16 to 18 pigs per sow," he says, "but there are also people that I've contacted who are in a position of producing 20 and 21."

One of the doctor's clients has three or four sows out of a herd of about 165 that produce 28 pigs per year. Some 25 percent of the sows produce 23 and 24 pigs per year. This farmer has focused on total management by computerizing operations as well as improving water quality.

Chlorination with the Land-O-Matic™ Chlorinator At Center Of Tests

Dr. Firth's studies, which were partially funded by the Ontario Pork Producers Association, consisted of two groups of 60 pigs divided equally by weight into six pens of five barrows and five gilts. A watering system was devised for each pen, which allowed for daily treatment with chlorine using the Autotrol® Land-O-Matic dry chlorinator and weekly testing of the water.

Two pens each were randomly assigned to non-treatment control, low-level treatment (1 part per

million) and high-level treatment (4 parts per million). Feeders were set up to provide the free choice feed with minimal waste. Feed was measured each day and the water was balanced with chlorine through the use of the Land-O-Matic chlorinator. Each week water samples were tested and weight gains were closely monitored. Hogs were graded and shipped when their weight was as close as possible to 220 pounds. At the start of the test, each hog weight approximately 50 pounds.

Substantial Weight Gains Noted

At the end of one study, Dr. Firth noted a weight gain difference of 21 pounds more using an average of 79 pounds of less feed per hog between groups with high-level chlorine water treatment versus the groups with no treatment. In the groups with low-level treatment, hogs averaged a weight gain of 18 pounds more than the control group. They also consumed an average of 34 pounds less feed.

In a second study, average differences of 12 pounds and 5 pounds respectively were recorded for the high-level and low-level water treatment groups compared to the control. Feed consumption in this study was the same for all groups.

In addition to better weight gains and better feed conversion, at no time in the weekly sampling of either farm were significant numbers of harmful bacteria found in the water.

Impressive Paybacks Achieved

Allowing for barn space, feed consumption and grades, Dr. Firth calculated that, based on the most favorable test results, the high-chlorination group achieved a \$7.10 (Canadian) improvement per pig compared to the control group. The low-chlorine group showed a \$1.45 improvement.

While these kinds of results cannot be expected in all cases, they do indicate the kinds of goals farmers should be setting for themselves. Dr. Firth believes that hog producers must continually upgrade their goals if they are to survive in the face of stiffening competition.

"Those guys who are always improving their production are the ones who are going to stay in business," he says. "The idea is not to set your goals down where they are readily attainable but to set them at a position where you have to sweat a little bit to get there."

Clogged Submersible Well Pumps Cost Tavern Four Rebuilds a Year. Experiment Proves Value of Chlorinated Water.

Iron buildup in the water system of a Richfield, Ohio, tavern used to be such a problem that it required rebuilding of the pump heads every six months. Because the system employs two wells, that meant four rebuilds per year.

Karl Garman, manager of the water conditioning department at Ralph Reinhart Company, a pump wholesaler in Peninsula, Ohio, explained that the situation has existed for six years. He estimated that each pump rebuild cost about \$125 to \$200 or \$500 to \$800 per year.

Working with a local dealer, Swan Plumbing and Heating Company, Garman recommended the use of an Autotrol® brand Land-O-Matic™ dry pellet chlorinator manufactured by Osmonics.

Experiment Serves Dual Purpose

Since the Land-O-Matic chlorinator was recently added to Reinhart's product line, and since two separate wells were serving the tavern, Garman figured the situation lent itself to an ideal experiment. Both his company and its customers could see just how well the Land-O-Matic chlorinator performed in actual use.

For all practical purposes, operating conditions in both wells are identical. The iron concentration in the raw water was 3 ppm, the pH was neutral, and each pump's flow was rated at 10 gpm. The wells' depths are 70 feet and 65 feet and they are about 60 feet apart. The water is filtered and softened at the surface.

For the six-month experiment, a Land-O-Matic chlorinator was installed on only one well. As Garman explained, "What we wanted to do was just watch the one well compared to the non-chlorinated (well) and see if we could hold the capacity."

The chlorine level was maintained at 0.5 ppm throughout the six months. "We had to adjust it at first," Garman said. "It is a little tricky, too, because there are two wells pumped into one pressure tank." He said close watch of the system was maintained the first three weeks to assure proper chlorination.

Results Speak For Themselves

Open discharge measurements at the end of the six month experiment showed that the flow on the chlorinated well was still at its full rating of 10 gpm while the non-chlorinated well had dropped to 5 gpm, or

one-half of its rated flow. The pump on the non-chlorinated well was sent in for its usual rebuild work.

Garman said that although many customers are familiar with liquid chlorination, the dry pellet system has its advantages. "What we wanted to emphasize here (was) that this would not only sterilize the water—the idea was to protect the pump." He said, "We were really pleased with the results we got."

Dry Pellet System Offers Advantages Over Liquids

Garman said that one of the disadvantages with liquid systems was that they do not offer good retention time at the well. Liquid chlorine does not always provide penetration to the bottom of the well as pellets do. Liquid also loses some of its potency to evaporation.

In contrast, the Land-O-Matic chlorinator dispenses chlorine pellets at a controllable rate. The system's dispenser holds up to 15 pounds of dry pellets, enough for extended periods of time.

The pellets have a 70 percent concentration of chlorine. They dissolve quickly and are small enough to pass through restrictions in the well. The dispenser is located above ground for easy refill.

Speaking of other benefits the Land-O-Matic chlorinator system provides, Garman said, "We're also treating water at the source of contamination rather than pumping up contaminated water and treating it in the house."

The system also kills harmful bacteria and provides a residual against recontamination, important considerations for any installation.

Garman also said that in many applications the Land-O-Matic chlorinator can provide a quick return on one's investment in the system.