Cattleman's Corner

LIVESTOCK MANAGEMENT

Cattle pump their own water

Frost Free Nose Pump is an effective low cost device for pumping water from any source

BY HEATHER SMITH THOMAS

Cold weather presents challenges for watering cattle, especially in areas with no electricity for pumps or tank heaters. Jim Anderson, at Rimbey, Alta., solved this problem by creating a system in which cattle pump water themselves from shallow wells, ponds or pressure systems using a watering system that never freezes even at -40 C.

Anderson's innovation, the Frost Free Nose Pump, is a piston pump, like the old-fashioned hand pump, pushed up and down, to lift water.

"We used a similar concept, but cattle push a lever with their nose," says Anderson. "This operates the piston pump by raising and lowering the piston in the cylinder, the same as a hand pump used to do. We capture enough geothermal heat from the ground, and contain that heat all the way up to the ground surface, to keep the water in the cylinder from freezing."

The waterer is a small, enclosed basin atop a vertical culvert. The culvert has two feet sticking above ground level, going down to whatever depth is required to make use of groundwater or the bottom of a pond or dugout nearby (water from the dugout is piped underground to the bottom of the culvert). A buried collection tank from a spring also works. A regular well can be used, as long as the water level comes to within 50 (and preferably 30 or less) feet from ground surface. On a drilled well, a nose pump requires a water supply of about two gallons per minute to water a herd of cows.

"Some ranchers use large pipes," says Anderson. "But, the typical installation is a road culvert at least 24 inches in diameter, set in the ground at least 20 feet deep. Factors that determine how much geothermal heat you'll gain is how deep you go, and how big a pipe you take to that depth. The bigger the pipe, the more opportunity for heat to rise, to prevent the water pipe in the centre from freezing."

David Woodworth raises cattle near Melita, Man., where winters can be very cold. "We've used a Frost Free Nose Pump for three winters, and the cows do all the work to water themselves," says Woodworth, noting it saves money, time and labour.

"We don't have to depend on electricity, wind, or sunshine for solar power," he says. "This was the most reliable way to provide water and it was very easy to install."

Woodworth's system is sitting on a 30-inch well crib, 30 feet deep. The well has limited capacity, but the installation creates 700 gallons of storage. It used to be an old wooden well crib about eight feet deep that watered 30 or 40 cows. Now, with the deeper cribbed well and nose pump, he can water 130 head.

"The only problems we've ever had is if it's really cold and windy, because ours is out in the open," says Woodworth. "Occasionally the top part will freeze. When cows are using it, however, you can tell if it's working without checking it, because they really bang it. As long as you can hear it, you know it's working. When it's really cold and windy I check to make sure there's no ice buildup. If there's a little ice, it only takes about five seconds to clear it away. All you do is give it a whack with a rubber mallet, clean the ice out, and it's good to go again."

Cows quickly learn to use the pump, he says. The first year Woodworth had heifers in the pasture and spent part of a day teaching them about it. "When they'd come up to drink I filled the trough and held my hand on the nose lever, and when a heifer was drinking I'd let it go against her nose," he says. "They soon realized that's where the water came from."

In winter, with 130 cows watering on the nose pump, even though some hadn't used it before, they soon figured it out. "I never even went close to them," he says. "There were enough in that group that knew how to use it, and they showed the others how it works."

Last summer his bulls were in that pasture and even though there was a slough nearby, they preferred using the nose pump to access fresh, clean water. Providing an alternate watering source away from a dugout or pond is healthier for cattle, and more environmentally acceptable.

Mike Possenroth, who runs 200 cows near Bentley, Alta. was the first to use a nose pump on a dugout. "Jim Anderson thought this would work, if someone was willing to try it," says Possenroth. "I'd been watering cattle from a dugout but it was fenced off so they couldn't fall through the ice."

Before going to the nose pump, he'd drill a hole in the ice every day with an ice auger, then use a gasoline engine to run a generator to run an electric pump. He'd pump water from the dugout into bathtubs for the cattle. He knew a full gas tank on the generator would last exactly two hours and 14 minutes. He'd leave to do other chores, constantly keeping track of the time because if the generator ran out of gas at -30 C, everything would freeze.

PHOTOS BY HEATHER SMITH THOMAS

A nose pump provides a reliable water source on pasture where power isn't available.

The Frost Free Nose Pump, which sits 50 yards from the fenced dugout, saves all that trouble. "We positioned it where the ground sloped away so no run-off goes back into the dugout," says Possenroth. "We dug the hole and put the upright culvert in, and hooked the water line on to it."

Using a backhoe, he dug a trench for the pipeline, so the water line was lower than the bottom of the dugout, for a gravity feed system. He started digging at the waterer and worked his way toward the dugout, laying pipeline and backfilling as he went. At the dugout edge, the backhoe made one last swipe with the bucket, he flopped the pipe into the water, and then closed up the edge of the dugout. "We went back to the culvert, and there the water was," he says. The water in the culvert rose to the same level as the ponded water.

"Many people are using the nose pump with dugouts now," says Possenroth. They dig the new dugout and put the trench and pipeline to the waterer in before the water collects. You have time to set the pipe exactly how you want it.

The nose pump is a good way to provide clean, fresh, safe water for cows, keeping them out of the pond or dugout. "The grass is tall on the banks and works as a filter system for run-off," says Possenroth. "Ours is just filled with run-off, collecting from the hills around it. This is usually enough water to serve the cows' needs in winter, and for quite a bit of the summer, too. We mostly use this pasture in the winter, with as many as 150 cows."

It's entertaining to watch cows pumping water. Anderson demonstrates the pump at various trade shows using a mechanical cow on a nose pump display he built. It stands at the nose pump, constantly pushing the lever.

Mike Nichols, in eastern-central Alberta, has used three nose pumps for several years. He mounted two on the same culvert, watering 130 cows all winter. He fenced off a dugout for the water source, and poured a cement pad around the culvert, as Anderson suggested, to insulate the ground and prevent hoof action from driving frost down.

"My father and I have one of Anderson's first pumps," says Nichols. "I use ours in the summer, too, and you can set it so it doesn't drain back down the pipe as far (to keep from freezing), making it easier for cows to pump."

Having a nose pump away from the water source is an important safety feature for both cattle and humans, he says. "I used to water from dugouts, and one winter I'd just chopped a new ice hole before a bad storm," says Nichols. "Snow covered the hole and I was trying to find it again, tapping the ice with my axe handle, and one foot went into the hole, all the way to my hip. Luckily I was able to pull myself out, but my leg was nearly frozen solid before I could get back into my tractor cab. Ever since I've had the nose pumps I haven't lost any cows in dugouts and I haven't slipped through the ice either."

Nichols uses another nose pump in a bull pasture. "It's the only thing they haven't wrecked," he says. "They have 300 acres to play and fight in and they haven't been able to wreck the nose pump. It's built to last."

Craig Dunmontel, a rancher in southwest Saskatchewan, has three pumps mounted on one culvert, serviced by a 46-foot well, providing 300 cows with water. "The water rises to about 14 feet of the ground surface," he says. "Before I put in the well, our water source was a spring-fed dugout, down in a coulee. I had to drive there daily to break ice and it's a bad place to get down into.

"When we dug our well we looked into solar power and other options, and those would have cost $14,000 and up. I wasn't too excited about having wires and things that might break down, and didn't want to be checking on a solar system every day. I really like the nose pump because it requires no maintenance and was cheap compared to anything else available."

For more information on Frost Free Nose Pumps phone Jim Anderson at 866-843-6744 or email info@frostfreenosepumps.com or check the website http://www.frostfreenosepumps.com.

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A dual nose pump setup, left photo, provides water even in winter, while Mike Nichols of Alberta stands next to a dual nose pump system, right photo, that draws water from a dugout.