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Frost-free nose pump lets cattle water themselves

Water without power

BY HEATHER SMITH THOMAS,

Cold weather can present challenges for watering cattle, especially in areas with no electricity for a pump or tank heaters. Jim Anderson from Rimbey, Alberta, solved this problem by creating an innovative water system in which cattle pump water for themselves from shallow wells, ponds or pressure systems - water that never freezes even at 40 degrees below zero.

Anderson's innovation is a piston pump, like the old-fashioned device in which a person works the handle up and down to lift water.

"We modified this so cattle could use their nose to push a lever. This operates the pump by raising and lowering the piston in the cylinder, the same as a handle used to do," he explains.

"Like the old-fashioned hand-pump, we have a three-inch cylinder down inside the well. This is how we made it frost-free; we capture geothermal heat from the ground and contain that heat all the way to the surface to keep water in the pipe from freezing," he says.

The waterer is a small, enclosed basin on the top end of a vertical culvert, with a lever at the back that is pushed by the cow's nose. The culvert is two feet above ground level, and goes down whatever depth is required to make use of ground water or water from the bottom of a pond or nearby dugout.

Water from a pond is piped horizontally underground to the bottom of the culvert, where it rises to the level of the pond surface - but will not freeze. A buried collection tank from a spring works, too.

A regular well can be used as long as the water comes up to within 50 feet (preferably 30 feet or less) from the surface. The nose pump can be adapted for an existing well if it meets these criteria. On a drilled well, each nose pump requires about two gallons per minute to water a large herd.

"Some ranchers use big pipes, but the typical installation is a road culvert at least 24 inches in diameter, set in the ground at least 20 feet. The two factors that determine how much geothermal heat you'll gain is how deep you go and the diameter of the pipe. The bigger the pipe, the more opportunity for heat to rise to keep the water pipe in the center warm enough," explains Anderson.

A property without power

Lowell Thorson, a rancher near Edinburg, ND, has been using two nose pumps for his cattle for four years. "I had the opportunity to buy a 2.5-acre farmstead adjacent to my property. I wanted a place where I could have about 30 cows with calves during February-March and keep



them separate from the others. I put self-standing panels around the well, and use a nose pump for that group," says Thorson. He also put a cement pad around the well to help eliminate mud.

"The vast majority of the cows figured it out right away. Once they see another cow pumping, they try it," Thorson says. "But there are always a few that need a little extra training because they just drink the water that the others slobber off the side of the nose pump."

Thorson's second nose pump location is in a pasture he rents from a farmer that went out of business 10 years ago.

"He had a large herd of cattle and was hauling water because he didn't have a good well there," Thorson explains. Another well on the property put out plenty of water, but required an electric pump and generator, which needed to be started each day.

With the nose pump, he is able to winter his bulls there without problem.

"When weather is cold there's sometimes ice buildup because of all the water flying around as they're pumping it, so I check it now and then to knock the ice off so it won't build up and stop the lever. It sometimes gets stuck in the back position and I just have to break it loose. Other than that, there's never been a problem having it provide adequate water for the animals," he says.

He explains that the source is a 50-foot well, but the water level comes within 8- to 12-feet of the surface, making it easy for cattle to pump water.

Thorson pastures cattle there in the summer. "The 30 cows there have never pumped it dry," he says.

It's also a safer option than the existing water hole on the property, Thorson says. "They often got stuck in the water hole and one of them drowned. I put a fence around that and try to keep cattle out. It's much safer to have them drink from the nose pump than go into the pond.

"It's a neat invention and I am quite impressed with it, not having to depend on electricity. It's never had any mechanical problems and is very dependable. This type of water system won't fit every location or every need, but it's a wonderful option for many situations, and the cows certainly enjoy it. I am sure there are people who use electric submersible pumps that can run off batteries, but the nose pump works very well for me," he says.

Environmental set-up

Kip Panter, who works for USDA-ARS Poisonous Plant Research Laboratory in northern Utah, has cattle on his ranch at Franklin and has used a nose pump for two years.

"A creek runs through my ranch and the NRCS was helping ranchers get cattle away from streams, offering a cost-share program. They had information about nose pumps and asked if I'd be willing to be a test case," says Panter. He installed it himself, using a 20-foot well and says his cows learned to use it very quickly.

Panter likes this system because the water is always fresh and clean. "The pan is empty except when the cattle are actively using it, so you never have moss or algae in the summer, and no water left in it to freeze in winter," he says.

"It's also very strong. I've had 2,000-pound bulls using them and they've rubbed and played with them and never hurt them. These pumps are fool-proof," says Panter. He put a 20- by 20-foot concrete pad around his nose pump so cattle don't stand in mud.

Works in the cold, too

David Woodworth uses nose pumps on his ranch near Melitia, Manitoba, where winters are very cold. "The pumps save money, time and labor, and we don't have to depend on electricity, wind or sunshine to run them," he says.

"Ours is sitting on a 30-inch well crib, 30-feet deep. The well has limited capacity, about two gallons per minute, but our installation creates 700 gallons of storage. It used to be an old wooden well crib about 8-feet

deep that watered 30 or 40 cows during winter. When we re-did the well and put in the nose pump, we were able to water 130 cows through winter," explains Woodworth.

"The only problems we've ever had are is if it's really cold and windy, because ours is set out in the open. Occasionally the top part will freeze up. When cows are using it, however, you can tell if it's working without actually going to check, because they really bang it and you can hear this. As long as you can hear it, you know it's working," Woodworth says.

When he feeds cows, Woodworth can tell if the nose pump is working, since the nose paddle sticks upright.

"When it's really cold and windy I check it more closely to make sure there's no ice build-up, especially first thing in the morning. If there's 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. Even if it's 40-below (zero) I don't necessarily walk by it; wind is what creates the most problem," he says.

Learning how to use it

Cows quickly learn to use it, Woodworth attests. "The first year we put it in, I had a bunch of heifers in that pasture. I spent part of a day teaching them about it. When they'd come up to drink I filled the trough up. They soon realized that's where the water came from," says Woodworth.

During winter when he had 130 cows watering on it, some of them had not used it before, but soon figured it out. "I never went close to them. There were enough of them in that group that knew how to use it, and they showed the others how it works," he recalls.

Woodworth has had his bulls use nose pumps while on pasture, and says that even though there is a slough nearby, cattle prefer the nose pump.

No more chopping ponds

Cattle that use ponds for winter water may fall through the ice and drown. It's also a chore to chop holes through ice for cattle to drink. Mike Nichols, a rancher in eastern central Alberta, used to water his cattle in dugouts, where he had to break ice daily for them in winter.

He recalls one winter when he chopped a new hole during a bad snowstorm. When he went out to check the water access, he fell into the dugout up to his hip.

"Luckily I hadn't chopped a very big hole; I didn't fit into it completely and was able to pull myself out quickly," Nichols recalls. By the time he got to the tractor his leg was frozen stiff and he had difficulty moving. His frozen coveralls made it near-impossible to remove without the help of his wife's hair dryer.

"Ever since I started using the nose pumps, I have not lost another cow in the dugout, and I haven't fallen into it, either," says Nichols.

With 130 cows and two nose pumps mounted on the same culvert, Nichols is able to provide adequate water for his herd. He uses another nose pump, serviced by a dugout, for his bulls because he keeps them separate from the cows during winter. "The bulls have 300 acres to play and fight in, and the nose pump is about the only thing they haven't wrecked. It's built to last," says Nichols.

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