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## Keeping stock water ice-free in winter

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Keeping stock water ice-free can be frustrating during colder months.

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Remember grandpa's old adage about chopping your own wood and warming yourself twice? I wonder what words of wisdom he had when he grabbed the ax and went to work on the ice covering livestock water.

Indeed, keeping a supply of fresh water available for your cattle in the winter is a daily challenge. But there are options, and some don't involve swinging an ax.

One option, depending on the weather, is literally right under your feet. Trey Patterson, COO of Padlock Ranch in Ranchester, WY, says they winter cows on dryland pastures, weather permitting. "We get our share of weather issues - cold or snow, or lack of snow. Some of our cattle are on pastures that are poorly watered, or water quality may be marginal," he says.

In those situations, they rely on snow, but not as the only source of water. "I know some operations that winter solely on snow. We've done that, but it creates challenges. Many cows voluntarily consume snow, but others are slow to learn; and some cows never do adapt. We found more variation in winter performance if you have to rely solely on snow," Patterson says.

So the Padlock Ranch provides a water source so cows have an option. "The quantity of available water might not be adequate if all the cows were relying 100% on water, but there's water for the cows that need it. Some cows go out and consume snow for a period of time and then come back to drink water," Patterson says.

"When using snow, we make sure cattle don't have excessive salt intake. A lot of supplements use salt as a limiter, and this increases cows' water requirement. I make sure cattle have adequate salt but not excessive salt. If they're salt-deficient, they won't drink enough water or eat enough snow, and won't eat enough food. There's a tight correlation between water intake and feed intake. They need enough water or snow to maximize feed intake. Cattle on winter range are on a low-quality diet and you want them eating as much as possible," he adds.

If cattle are used to having adequate water, relying on snow can hurt performance. "They

need time to adapt, and I don't recommend you completely pull water away from them," he says.

The Padlock bases stocking decisions on available snow and available water. If there's not enough water and snow is scarce, they either move the cows or haul water.

"When hauling water, we tap into a source where we can fill our tank truck in a reasonable period of time. This is often from a pipeline from a well, and we also have coal-bed methane water. We can haul water out to a set of stock tanks," Patterson says.

Hauling water can be cost effective if it means cows can stay on winter grazing and not be fed hay.

"Each operation has to calculate this. In an open winter with a lot of available feed, it might be cheaper to haul water than pull cows in for feed. You have to evaluate your time, labor and equipment. With large numbers of cattle, it may not be feasible to haul enough water for them," he says.

## Dealing with ice

When it comes to ice, the Padlock utilizes a combination of systems.

"In some areas we simply chop ice, but we don't have enough labor to do that on every water source. So, in some pastures, we use a well that runs into a linear water line and along that line are several concrete stock tanks buried in the ground," Patterson says. This takes advantage of ground heat to keep water warmer so it won't freeze.

"We open up a portion of each tank, and the rest is partially buried. A lid enables us to get down in there and work on the float if necessary. Even if we get some ice on the front part, the water underneath is warmer and we don't have a foot of ice to chop through. These tanks face south to catch more sun, and we paint the concrete wall in front black," he says. They use propane heaters for stock tanks above ground.

Another method to keep water from freezing is an overflow system, where water runs continually into the tank and out. "We have some systems set up that way, but you need adequate water that won't pump a well dry. You might have a tank with an overflow that runs into another tank that has an overflow that runs to the creek. You don't want to create an ice flow, but could have a line running back to the creek you pull water from," he says.

If weather is below zero, you may get a thin layer of ice but the circulating water keeps it from getting so thick it's a chore to break. You'd only have to check it if weather got below a certain temperature.

"This is usually not an option with coal-bed methane water, because they don't want that water spilled out. When they drill wells to extract methane from coal seams, there's usually water in those seams, and it comes above ground. There can be water quality issues, but in most of the wells we've tested, the metal levels are not toxic. Our coal-bed methane water is actually better than water coming from some of our other wells which are high in sulfate," he explains.

Some wells utilize electricity for pumping, some are run off a generator and some use propane or a gas motor. "We've rigged some of our gas motors with a larger tank, allowing us to get a full 24 hours of pumping," says Patterson.

"We've also used windmills, but that can be dangerous if we get several days in a row without wind. Some people use solar power, and it's becoming more affordable. We looked into this, but the challenge is weather — if you get several overcast days. You need an alternative plan for the times it won't work," he says.

Heather Smith Thomas is a Salmon, ID, rancher and freelance writer.

## Nose Pump

Jim Anderson, a rancher near Rimbey, Alberta, solved the problem of stock water for regions with either no electricity or temperatures down to -40°F. His innovation, which he's been marketing for 10 years, is a piston pump, like the old-fashioned well where you work the handle up and down. "We modified this so cattle could use their nose to push a lever, which raises and lowers the piston in the cylinder, the same as a handle used to do," Anderson says .

The 3-in. cylinder is inside a larger pipe that captures geothermal heat from the ground. The typical installation is a road culvert at least 24-in. diameter, set in the ground at least 20 ft. The bigger the culvert, the more ground heat rises to keep the water pipe in the center warm, explains Anderson.

The culvert has 2 ft. sticking above ground. The waterer is a small, enclosed basin on top of the vertical culvert. The water source can be a shallow well, nearby pond or lake, or buried collection tank. Many ranchers use a fenced-off pond or dugout (to collect run-off from surrounding hills). "Water from the pond is piped horizontally underground to the bottom of the vertical culvert, where it rises to the same level as the pond surface, but will not freeze," says Anderson.

With the pond, lake or stream fenced off, cattle can't pollute it or fall through ice in winter when trying to drink. Ungrazed vegetation around it acts as a filter for run-off water coming into a pond and cattle always have fresh, clean water. The water pipe is designed to drain back down several feet after a cow quits pumping, so there's never any water left standing in the top of the pipe to freeze.

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