

LIVESTOCK NEED WATER WINTER AND SUMMER

By

Richard L. Witz

Associate Agricultural Engineer

Electricity has made possible a good water supply the year round without the drudgery of chopping holes in ice or kindling a fire in -30°F . weather. Electricity not only can save labor, but it can provide ice free water at a lower cost. The cost can be lowered only if proper installation is made. Preliminary tests at this experiment station indicate that water can be provided to livestock in an open shed for as low as 70 kilowatt-hours of electricity per month. This was the amount used in two different test installations during December 1947. At 2 cents per KWH the cost would be \$1.40. This would not go far in hiring a man to chop ice out of a tank, nor to light an oil or coal burner each day; nor pay for much fuel oil or coal.

Water tanks with electric heating elements can be installed in or out of the barn, whichever is more convenient. Such tanks when used stimulate greater production from livestock since greater water consumption results. Safety from fires is another advantage offered over the conventional tank heater. In planning your installation follow some of the suggestions below to reduce the cost of operation:

1. Use as small a tank as possible. Not over 150 gallons in size and the smaller the better. Of the two installations mentioned above, one was a 120-gallon tank and the other was a drinking cup which had heating elements installed to keep it from freezing.

2. Insulate. Use the equivalent of 3 or 4 inches of commercial insulation; cover as much of the tank as possible, and install a baffle board which extends down into the water to prevent air circulation over the water which is not exposed for drinking.

3. Install inside a shed or protected area if possible. This prevents snow from blowing into the tank. It is not too important so far as operating cost is concerned, but it does help to prevent underground pipes from freezing. Cattle will drink more water indoors, and livestock need to be encouraged to drink water in cold weather.

4. Install a float to control water level. This makes it possible to install a smaller tank which reduces the cost.

Commercial Units Available

Three types of commercial units are available: (a) large immersion units, (b) all-weather drinking cups, and (c) float-type heaters. All have thermostatic controls.

Immersion Units are satisfactory and make economical installations when installed in small insulated tanks.

All-weather drinking cups are probably the most satisfactory where water is available under pressure. Operation should be very economical.

Float-type heaters are satisfactory for temporary installations in uninsulated tanks; but operating costs are high, the tank may be damaged due to ice, the capacity of the tank will be reduced due to ice formation, and it is impossible to install a float control. A float-type heater was very satisfactory in an insulated tank installation at the college dairy shed. Plans of this insulated tank are available from the Agricultural Engineering Department.

Home-Made Units

Farmers may build their own units using hot-water tank elements or soil heating cable for heat and a thermostat satisfactory for low temperature operations. One practical way is to buy a large immersion or float-type heater with the thermostat already installed and then obtain a small tank and insulate it. If you wish to install it in the same place as you already have a large tank, set the small tank inside the large one and insulate between the two with shavings or other insulation. Then cover both tanks leaving only a small space for the livestock to drink.

If you have any further questions, you may write to the Agricultural Engineering Department, N. D. A. C., Fargo, North Dakota.

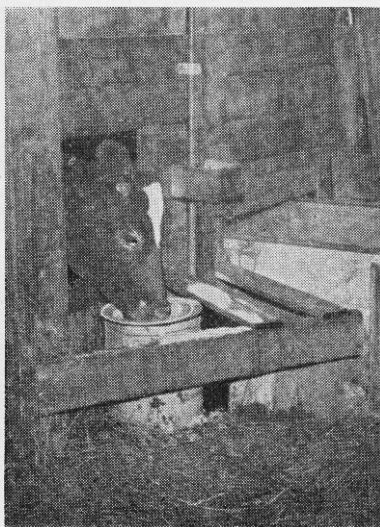


Figure 1. The automatic drinking cup used to water two pens of dairy heifers in an open shed on the college farm. Operating costs were 1.5 to 2.0 kilowatt-hours per day.

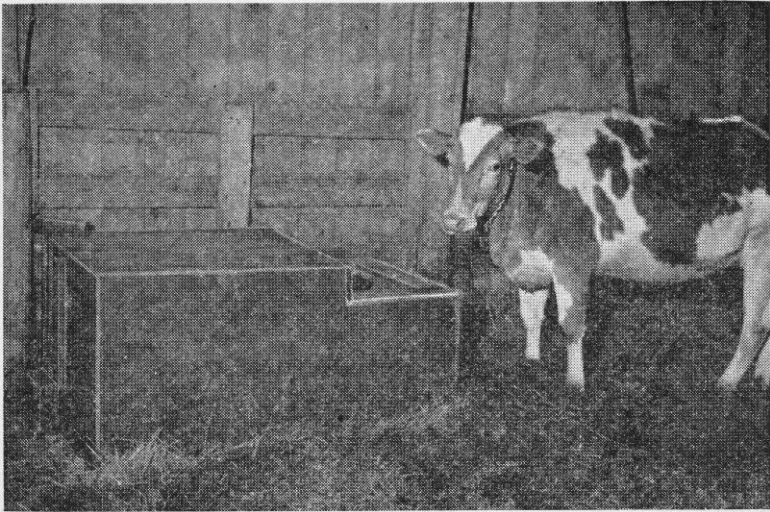


Figure 2. The insulated, 120-gallon tank which was used as a test unit. Operating costs were the same as for the drinking cup. A float to control the water supply is used. Plans of the above tank are available.



Figure 3. A large tank insulated by farmer. More insulation was applied after picture was taken, but operating costs were about 10 kilowatt-hours per day.