LIVESTOCK AND
NATURAL RESOURCES

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BROTHER, CAN YOU SPARE A CUP OF WATER?

Hot weather means thirsty animals. They want cool, clean water. If water consumption is normal, they will eat normally. If they are not drinking, they are not eating. I have seen this first hand while I was up in Canada.

The major influences on water intake in beef cattle are:

- ***Environmental temperatures***
- ***Dry matter intake***
- ***Stage and type of production***

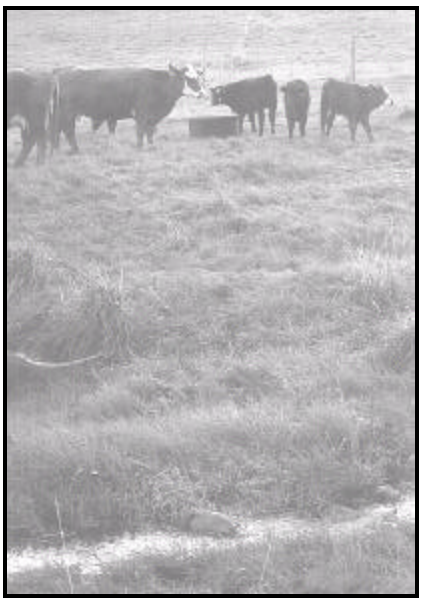
How Much Do They Need?

Beef Cattle

The highest requirements listed in the NRC Nutrient Requirements of Beef Cattle are at a temperature of 90 degrees.

These range from 9.5 gallons per day for a 400 pound calf to 20.6 gallons per day for a 1000 pound steer being finished and a 1600+ bull. A lactating cow requires 16.2 gallons per day at 90°F.

Sheep



Sheep may consume 12 times more water in summer than winter. According to the Sheep Care Practices Manual, sheep need approximately one gallon of water per day per mature animal.

Horses

According to Harold Hintz in his excellent book, ***Horse Nutrition: A Practical Guide***, an 1100 pound horse may drink six to 10 gallons per day. Hard working horses would need more. A lactating mare producing 30 pounds of milk daily *(4.25 gallons — one gallon of water weighs eight pounds)* would require 11 to 16 gallons per day.

Some Final Thoughts

Two points to remember:

- ***When it is hot, animals drink more***
- ***You do not want to run short of supply ever — it is not a pretty sight***

Water Temperature

Avid readers of the ***FOOTHILLRancher*** may recall the situation that occurred on the project site in summer 1996 with regards to water. We were using black poly pipe above ground. It worked okay until the middle of June when water temperatures in the 40 gallon portable troughs being used on irrigated pasture soared to 120°F.

Cattle will not drink at that temperature. A mile of pipe had to be buried to bring the temperature down to 80°F.

We will be conducting research this summer on water temperature. One study was one with ponies by Harold Hintz. While the study was

conducted with only six ponies, it showed that intake of colder water in five of the six ponies was 60% greater than warmer water. One of the ponies intake was the same.

Storage

We know how much we need. The next issue is how to we get the water to the livestock. We need a place to store water.

This can take many forms:

- ***Storage tanks***
- ***Ponds***
- ***Rivers***
- ***Streams***

Hauling water may also be an alternative in some situations, provided the capital investment is low.

I want to challenge you to provide alternative water sources for livestock if they are currently watering directly out of a pond, river, or stream.

Allowing cattle direct access to surface water can lead to:

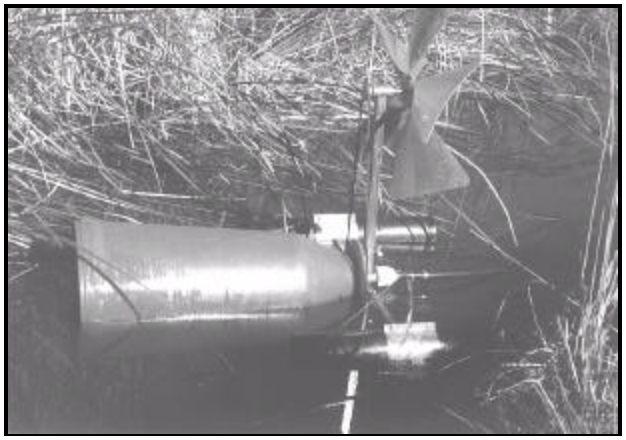
- ***Environmental problems***
- ***Herd health problems***
- ***Poor pasture and range utilization***

We can pump water out of these sources into storage tanks or directly into troughs through using gravity, solar, wind, the animal itself, and a gas or diesel pump.

Gravity

Using a simple siphon out of a pond or stream may be all that you need if your water tank or trough is below your water source.

At the project site, we have 200 feet of fall to help us get water around the property. For every 3.1 feet of fall, you pick up one psi.



Sling pump in operation.

Pumping

Several technologies exist for pumping water. Two of these were discussed in the Spring 1997 issue of the ***FOOTHILLRancher***.

The **M3 Solar pump** will pump 2.5 gallons a minute with 23 feet of lift *(see photo bottom right)*. The pump floats in the water. If you did not have a lot of lift, you could pump water over a long distance. It is powered by one 75 watt solar panel and costs $1,500.

They will be coming out with another model that will pump 35 gallons a minute with 80 feet of lift. It will need four 75-watt solar panels and cost around $4,000. Remember, you need sun for the pump to work.

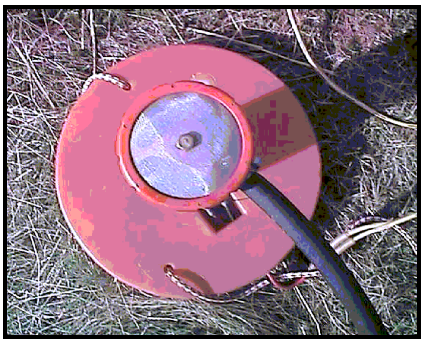
There are also other centrifugal and submersible solar powered systems which can work. The cost will be around $2,000 to $11,000 depending on the configuration. Most will fall in the $4,000 to $6,000 range.

Ram pumps use the force of gravity to pump water *(see photo on page 3)*. It needs a minimum 4.5 feet of fall to work. We have been able to pump 15 gallons an hour with 25 feet of lift. They will pump 24 hours a day. Cost of a ram pump will run from $125 to $300.

Sling pumps may also provide an alternative for streams or ponds *(see photo above)*. The pump site is self-supporting and is powered by the flow of water. You would need a minimum flow of 1.5 feet per second.

A windmill attachment can also be used provided you have a minimum wind of 4.5 miles per hour.

Depending on the size of the pump, you can get from



M3 solar pump

554 to1,056 gallons per day. Cost is around $1,300 for the pump and windmill attachment. The pump alone is around $700.

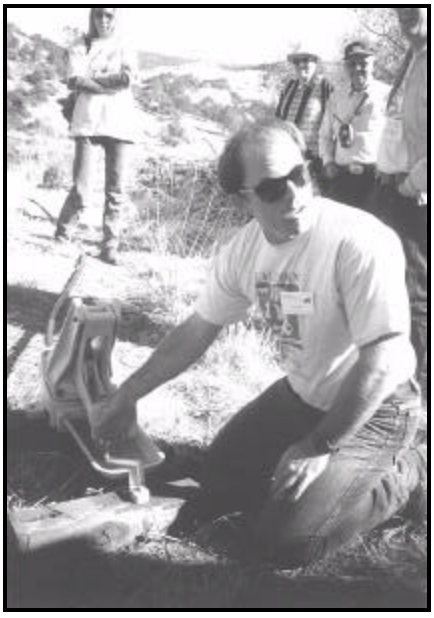
We currently have this pump in a pond on the project site. It has a windmill attachment. Unfortunately, the pond is too sheltered to run the pump. We will move pump to another location this summer to test it out.

Closeup of ram pump.

A **Pasture pump** uses the animal to do the pumping *(see photo to right)*. The pump must be located above the water source, otherwise, water will just flow through and not stop. The cattle use their noses to push a pendulum unit that pumps water into a small bowl. A one to two day training period is required before the cattle learn to operate the pump effectively.

Most manufacturers recommend one pump to adequately serve between 20 to 30 cow-calf pairs. The pumps are very portable and can be easily moved. These pumps do have some limitations. They are shallow well pumps and can only lift water about 20 feet. The approximate cost of a pasture pump is $350 to $450.

We will also be testing this pump at the project site during the summer.



Pasture pump being demonstrated.

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