

**Duane E. Pysher**  
 Grassland Management Specialist  
 Natural Resources  
 Conservation Service

I just looked out the window thinking about what I was going to write about in this issue of *Foraging Around*. I see that it is still raining and water is running down the window.

I realized that we often take water for granted in our everyday lives. It is a very precious and essential element of life but oftentimes we do not become concerned with that fact until there is none available.

When you think about water and its availability in a grazing system, most livestock producers have many choices to make concerning how, where, and when they will provide it. Let's think about those choices and what factors need to be considered in making those choices.

First choice is where to provide water for your livestock. More specifically I am thinking that you need to decide if you are going to put water in each paddock or to provide it at a central water facility.

There are a few things to consider in making this first choice. First is, what class of livestock are you dealing with? A beef herd or lactating dairy herd should make a big impact on your decision. There is no question if you should have water in the paddock for the lactating dairy cow — the question is can you afford not to do it? Water is the cheapest feed you can give your cows to make milk and having an available supply of good, clean water in the paddock is the best way to give it to them.

In addition to making milk, the fact that the trough is in the paddock gives most dairy farmers the option of using smaller troughs. As a rule, only one or two cows will go for a drink at time when it is in the paddock; however, if one cow leaves the paddock to go to water, the rest will follow and then you need a large volume of water to meet their needs. They will also consume more water in a typical day if it is more readily available to them.

Providing water in every paddock to produce more milk is not as critical with the lactating beef cow, but con-

sider this fact — if you have water in every paddock, do you need to have as good a laneway system for the beef cow herd? The answer is probably no if you do not need to go to the paddocks routinely with equipment. Then the money you would spend on laneways could be used to provide the water system and maintain it.

Secondly, we need to think about the source of our water supply. Two considerations associated with the supply are quality and quantity. Most folks think about the quantity part, because it is important to have enough water to meet the livestock's need for the entire grazing season. The quality aspect is often overlooked and generally never considered.

I am going to provide you with some documented evidence that quality of water can and does make a difference in animal performance.

A dairy farmer and his son who are grazing a herd of Holsteins in Wayne County have water available in every paddock. The water source is the only thing that changes from paddock to paddock. The cows were moved from a paddock that had a spring as the source of water to a paddock that had a pond as the source of water. The 50 lactating cows dropped a total of 364 pounds of milk in one day and stayed there until the third day, when their production level returned to almost normal and they were back on the spring water. This same trend was re-

peated in three grazing cycles in 1997 and also in 1998. This points out that it was not the availability of water but the quality of the water provided that caused the drop in milk production. I would tell you from this and other data that water quality is as important as quantity.

Once you decide that you want to put water in every paddock, it is important that you choose a system that can supply the quantity of water that the livestock will demand. To deliver that water you need to put together the components that will transfer the water from the source to the trough or tub the livestock will drink from.

There are many types of pumps or devices that will move the water. They all move water — the difference is basically the form of energy that is used in doing the pumping. There are pumps that run on solar-collected direct current, alternating current, wind power, kinetic energy from flowing water in a stream or from a spring flow, or are operated as a result of energy supplied by the livestock that are drinking. Every situation needs to be evaluated to determine which pump will do the job.

Based on the pump selected, you can choose the size of the pipe that will deliver the water to the livestock.

The last decision that needs to be made is the type and size of the trough, the number of troughs needed, and their location. As we discussed earlier, you can use a smaller trough if water is available in the paddock; however, that is not the only consideration that goes into the size of the trough. The number of livestock, type of livestock, and flow delivery or recharge rate of the trough are important sizing considerations.

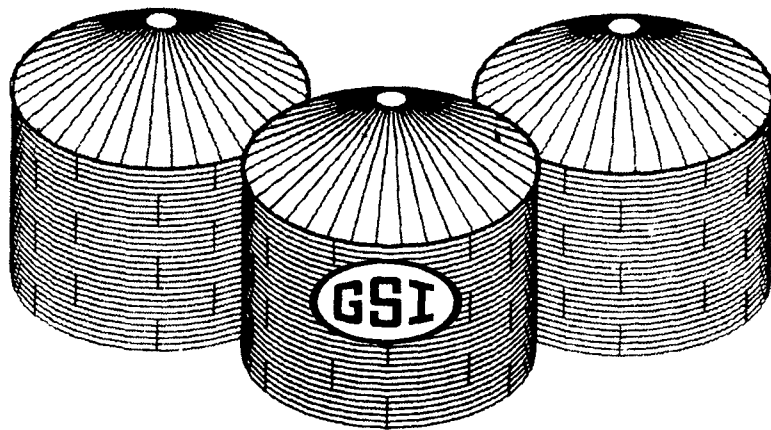
The recharge rate of the trough is the most important factor in sizing the trough in my estimation. It is the valve that controls the recharge if the pump and pipe are sized properly to service the system. To use a small trough, you need to be able to deliver water to the trough at a rate faster than it will be consumed.

If your pipe system delivers eight gallons per minute, but you install a valve that delivers three gallons per minute, then the system is limited by the flow rate of the valve and you have to consider a larger trough to handle the demands and provide a reserve supply for the livestock. I recommend paying the cost of the valve that will give you high volume flows and consider using a smaller trough.

There are many factors that go into the design and installation of a watering system. We have briefly discussed many of them, but you need to think about your goals and objectives associated with your grazing system.

I think most of you will be profit-motivated and the availability of a reliable, high quality water supply is very essential is helping to maximize those profits. If you need additional information or assistance to evaluate your watering needs or to design and install a system-contact your local Natural Resources Conservation Service office, county cooperative extension office, or conservation district office to get that help.

You can also contact me at (717) 237-2221 or at NRCS, Suite 340, One Credit Union Place, Harrisburg, PA 17110-2993. Until next time, happy grazing!



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