



Using Temporary Watering and Fencing in a Rotational Grazing System

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Introduction

Research has shown that pasture is poorly utilized beyond 800-1,000 feet from the watering source, and perhaps even less in steep terrain. Therefore, farms desiring a high level of management intensity (see Virginia Tech's "Designing a Flexible and Efficient Rotational Grazing System," SPES-707) may find temporary water troughs and electric fencing to be very useful. The use of temporary watering points can greatly enhance grazing management from spring through fall, whether it involves subdividing pastures paired with frequent livestock moves, utilizing large pastures more effectively, or bringing in new grazing acres. Temporary electric fencing is an excellent tool for intensifying management on an as-needed basis. This publication, one of four in a series on rotational grazing, focuses on considerations for designing these systems.

Temporary watering options

The most common approach for installing temporary or portable water troughs is to tap into an existing pressurized water source (e.g., a hydrant or permanent waterer) and run $\frac{3}{4}$ - or 1-inch plastic polyethylene (PE) pipe on top of the ground to the desired area. Farmers often run the pipe beneath a division fence to protect it from animal traffic. Valves or quick couplers installed at regular intervals in the pipe allow for a portable trough to be moved throughout the field, facilitating multiple subdivisions with temporary electric fencing. The Plasson Quick Coupling Valve is an example of one such valve commonly cited for this use by farmers. See figures 1 and 2 for various ways these systems are put to use.



Figure 1. A permanent waterer mounted on runners can be pulled with a four-wheeler (a), a gravity-fed stock tank with a floor-mounted float valve (b), tapping into a pressurized waterer with aboveground PE pipe, extending water service to an adjacent field (c). (Photo credits: John Benner, Virginia Cooperative Extension [1a], Matt Booher [1b], Jacob Gilley, Madison County, Virginia [1c].)



Figure 2. Kiwitech 100-liter Drag Trough (2a); Kiwitech Micro Trough (2b); Micro Trough implement, including its ground stake. (Photos reprinted with permission from Kiwitech International Ltd.)

Solar-powered pumping systems can enable the use of surface water sources, allowing for more intensive grazing management where a pressurized water source is not available. Most commonly, a solar panel is used to power either a submersible or surface-mounted pump, which fills a reservoir. From there, water is gravity-fed to a stock tank fitted with a float valve. Alternatively, a solar panel can be used to charge a battery bank, which then powers the pump for direct filling of a stock trough. Some farmers have built solar-powered watering systems with a reservoir mounted on a wagon and a stock tank mounted on runners for portability (fig. 3).



Figure 3. A solar-powered pump placed in a nearby creek fills a reservoir placed on a movable wagon, which then gravity flows to a stock tank with a float valve. (Photo credit: Matt Booher.)

Solar panels and compatible direct current (DC) pumps are widely available online, and their cost has decreased considerably in recent years. Depending on specific farm needs and site constraints, farms with a relatively low water demand (under 2,000 gallons/day) and low lift requirements (15 feet or less) can generally purchase a pump and solar panel for a reasonable cost. Troughs, reservoirs, and plumbing components add to this cost, and vary widely depending on the situation. Farms with a water demand of over 2,000 gallons/day and/or lift requirements exceeding 15 feet will have significantly increased costs for a pump and solar panel array. Many “plug-and-play” solar watering kits are also commercially available online.

Freeze protection of aboveground water

Aboveground watering components are generally limited to use from spring through fall. However, installing safeguards to protect a temporary watering system against short-term freeze events can often extend its use by a couple of weeks in either direction. Common safeguards include the use of high-density polyethylene (HDPE) or cross-linked polyethylene (PEX) pipe and/or valves. Many producers who use temporary watering systems also employ specialized drip valves that open based on temperature. The commercially available Freeze Miser is a ready-to-use option often cited by farmers, but other similar thermal wax actuators can be adapted for the same use.

Temporary electric fencing

A variety of temporary electric fencing products are available, which can greatly facilitate management (Figs. 4, 5, and 6). These products include step-in posts, poly wire or poly tape (plastic twine or ribbon with wire filaments that conduct electricity), and electric netting. These materials are designed to be installed and removed relatively quickly with minimal effort. Temporary electric fencing does not provide a physical barrier; instead, it creates a psychological barrier that works well on an as-needed basis to subdivide existing permanent paddocks when a high level of grazing management intensity is desired. For example, stockpiled pasture is often limit-grazed (strip-grazed) using temporary electric fencing to rotate livestock every one to three days to increase forage utilization. Temporary electric fencing may also be used to exclude livestock from an area, such as a seasonal bog or a newly seeded area. Due to its flexibility, temporary electric fencing has become the tool of choice for many farms that operate with a high level of grazing management.



Figure 4. A single-strand electric poly-wire fence acts as a barrier for a herd of cows. (Photo credit: Isaac Swortzel, Augusta County, Virginia.)



Figure 5. A single strand of electric poly-wire fence keeps a herd of cattle enclosed in a specific section of the field. (Photo credit: Todd Anderson, Albemarle County, Virginia.)



Figure 6. Two strands of electric poly wire block the entrance to a pasture. (Photo credit: Matt Booher.)

While labor-saving measures can be taken when using temporary electric fencing, they generally require at least a moderate level of physical fitness and time. Many producers who use temporary electric fencing to move livestock under an intensive rotation schedule say they benefit from more docile livestock, as well as the opportunity to better track changing pasture conditions. Additionally, many producers who have used temporary electric fencing to extend the grazing season claim that the reduced time spent making, moving, and feeding hay more than offsets the time spent moving temporary fences.

For a more detailed review of temporary fencing options and use, see Virginia Cooperative Extension publication “Reducing Labor When Using Temporary Electric Fencing,” SPES-709P, <https://www.pubs.ext.vt.edu/SPES/spes-709/spes-709.html>.

Technical resources and cost-share information

Soil and Water Conservation Districts (SWCD)

Soil and Water Conservation Districts throughout Virginia offer technical support for grazing management and state-funded cost-sharing to install grazing management infrastructure, including interior fencing, waterers, stream exclusion fencing, and other agronomic practices. Find a list of local offices from the Virginia Department of Conservation and Recreation at “Virginia’s SWCDs by Locality,” <https://www.dcr.virginia.gov/soil-and-water/swcdlist>.

Natural Resources Conservation Service (NRCS)

Offices throughout Virginia offer technical support for grazing management and federally funded cost-sharing to install grazing management infrastructure, including interior fencing, waterers, stream exclusion fencing, and other agronomic practices. Find a list of U.S. Department of Agriculture Service Centers and associated NRCS offices at “Find Your Local Service Center,” <https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/virginia#contact>.

Virginia Cooperative Extension (VCE)

The Virginia Cooperative Extension’s Graze 300 website (<https://ext.vt.edu/agriculture/graze-300.html>) offers information on grazing livestock for 300 days by using better pasture management and environmental stewardship. Extension offices in each county in Virginia offer education and resources from Virginia Tech and Virginia State University, as well as the entire Extension system. Find a list of Virginia’s local offices and regional centers at “Local Offices,” <https://ext.vt.edu/offices.html>.

Online Manufacturers/Retailers of Popular Solar Watering Systems (no endorsement is implied)

- Advanced Power Inc., <https://www.solarpumps.com>.
- RPS Solar Pumps, <https://www.rpsolarpumps.com>.

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