



# RUNOFF

HANOVER-CAROLINE SOIL & WATER CONSERVATION DISTRICT



VOLUME 32

2009-2010 NEWSLETTER

EDITION 2

## Turn Fall Leaves into Valuable Soil-Enhancing Organic Matter

Don't burn or throw away those valuable leaves! They can, over a short period of time, be turned into a rich, crumbly, black humus, which makes an excellent soil conditioner. Humus has a number of soil-beneficial qualities which include: increased aeration, improved soil structure, improved water holding capacity, increased buffering capacity, and improving the environment for soil-borne microorganisms which help plants in many ways.

If you are interested in producing a regular supply of compost it is a good idea to build a composting bin. They can be made from wood, wire, or a combination of the two. Many people make two or three bins next to each other and cycle the compost through them as it goes through various stages. Whichever composter you use, it's a good idea to locate it in or near the garden, as many nutrients will leach out from under the pile. The composter can be moved from time to time to utilize the nutrient rich soil below it.

Making compost is easy. Start with a layer of fairly coarse material such as twigs or chopped corn stalks. This should be covered with a layer of plant and kitchen refuse-leaves, straw, weeds, coffee grounds, crushed egg shells, etc. You should not use meat wastes, as this will attract burrowing animals, as well as cats and dogs. Over this add a layer of rich, green material or manure. If you have no manure, 1/2 cup of 10-10-10 or blood meal will do.

To inoculate the compost pile with the microorganisms that eventually produce the humus add a one-inch layer of garden soil for each six-inch layer of plant wastes. Repeat the layers of plant material and nitrogenous material and soil until all the waste material is used up. Water the pile often enough to keep it moist, but not soaking wet. Soon the pile should heat up, as bacterial fermentation takes place. The size of the pile should also decrease. In two to three weeks the pile should be turned to ensure uniform breakdown.

When the compost is finished it will be black and crumbly, with a pleasant earthy smell. The heating stage of the composting process will have killed most weed seeds, making the compost an excellent soil amendment.

*by Mac Saphir, Extension Agent  
VA Cooperative Extension*



### **Special Notice about "Runoff"!**

In an effort to conserve natural resources and reduce costs, there will be only THREE more paper editions of "Runoff" printed. Beginning in July 2010, paper copies of this newsletter will be sent only by request. If you do not already receive "Runoff" electronically, please contact the District with an e-mail address. If unable to receive e-mails, please call to request continuation of paper copy delivery. Send e-mails to [Rebecca.Jones@va.nacdnet.net](mailto:Rebecca.Jones@va.nacdnet.net) or call 804-537-5225 x 115

### **INSIDE THIS ISSUE**

*Rainwater Harvesting  
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Conservation Equipment Rental*

Water can be a limiting factor when grazing livestock. A lack of stock water will prohibit land use by livestock during certain seasons of the year or may require hauling water during dry months or drought conditions. Improper distribution of watering sites will contribute to the following:

- Excessive grazing in areas near water sources.
- Uneven utilization of the rangeland.
- Livestock traveling long distances to get to water which reduces grazing time, forage intake, weight gain or milk production.
- Loss of forage from excessive trailing and trampling.

### Water Requirements of Livestock

The following factors demonstrate how water consumption is influenced by the type and physiological status of livestock, nature of the forage and weather conditions:

- Green forage is higher in moisture content than dry forage and reduces water consumption.
- High temperatures increase consumption, while cool temperatures reduce consumption.
- Increased humidity in the air reduces daily consumption.
- Water consumption increases with age, weight, pregnancy and lactation.

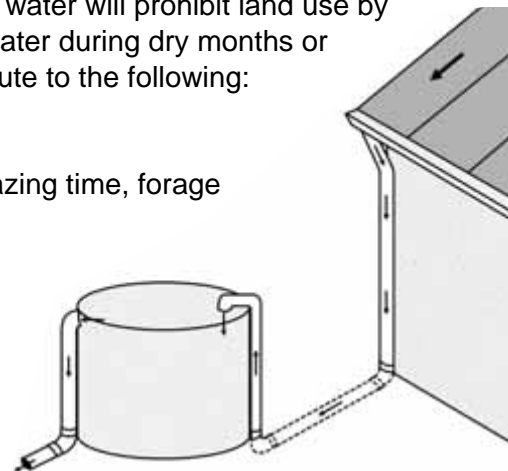


Figure 1. A typical rainwater harvesting system uses a roof, gutters, downspout and pipes underground, and backup into the top of the collection tank. This prevents livestock from damaging the pipes and allows the tank to be much further away from the shed. Unless there is a drain along the lower pipe, the standing pipes will contain water that is susceptible to freezing.

Table 1. Average daily consumption of water by various livestock species.

Cattle	7 to 18 gallons
Horses	8 to 18 gallons
Sheep and goats	1 to 4 gallons

General rule: Provide 2 gallons of water per 100 pounds of body weight daily.

### Sources of Water

Rivers, streams, springs and existing stock ponds provide the least expensive source of water. Water wells provide water in many locations where surface water is not available. Windmills, solar powered pumps or electric submersible pumps, and piston-engine driven pumps are used to bring water to the surface. Another option may be rainwater captured in a storage container (tank) as a supplemental or as the sole source of water for livestock.

### Rainwater Capture

Rainwater capture is done with a collection surface, conveyance to a storage tank and a watering trough. You can capture rainwater as runoff from a house, barn, rain barn or specially prepared surface area on the ground. During a one-inch (25.4 mm) rainfall, approximately 0.6 gallon (2.3 l) of water falls on each square foot (0.09 m<sup>2</sup>) of surface area. Runoff is collected more efficiently from smooth surfaces, such as tin roofs. Efficiency decreases as the surface becomes rougher and more porous. You can capture runoff from an existing or newly constructed roof (or a “paved” area on a hillside) surface conveyed through guttering and piping, cleaned with a roof washer and/or screen, and stored in a collection tank for livestock. The two most expensive parts of the system are the roof or paved surface and the storage tank. If an existing system (barn roof and storage tank) is in place, the cost to add rainwater to the system is minimal. Storage tanks can be made of concrete, fiberglass, corrugated metal (with or without special liners), steel or polyethylene. Polyethylene tanks are the least expensive (by per stored gallon) up to approximately 4,000 gallons. Corrugated metal tanks with special liners are also a cost effective option. However, local availability may dictate the container choice. Covered tanks reduce evaporation and keep water cleaner. Algae must have sunlight to grow. By using translucent material and closing the top, algae

## Rainwater Capture continued...

problems will be minimal. All livestock prefer to drink cool, clean, fresh water. Smaller (more narrow and shallow) watering troughs allow more frequent water replacement, thus keeping water cooler and fresher. Larger herds require more linear trough space to allow more animals to drink at the same time. Evaluate fill rate to ensure water is readily available for livestock. For sheep and goats, troughs need to be cleaned regularly to prevent parasite and disease contamination. Consider small/young animals that may accidentally fall into troughs and provide them a way to escape. Most troughs use a float valve to maintain water level. Protect floats and valves by keeping livestock and wildlife away from the hardware. Place the water trough at a lower elevation than the tank to allow gravity flow from the tank to the trough. If the tank and trough are at the same elevation, only the tank volume above the trough float is available water. If the storage tank is lower than the watering trough, the water must be pumped up hill.

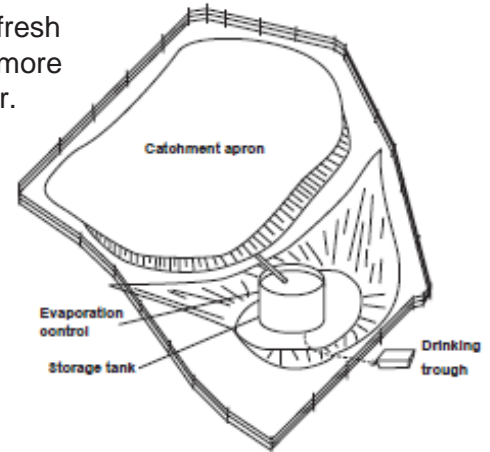


Figure 2. This rainwater harvesting system uses a prepared surface of concrete, rock or a sealing material to shed the rainfall. The rainwater is then diverted into the top of the collection tank.

## How much water do you need?

The amount of water needed depends on the kind of animal, number of animals, annual rainfall and the expected length of time between rainfalls. In addition to domestic livestock requirements, allow for some use by wildlife when calculating water demand. The lower the average annual rainfall, a larger roof and storage container are needed, as the following example demonstrates:

**Example:** 2 mature horses in a 30-inch annual rainfall region with rare occasions of 2 months between significant rainfalls.

2 horses x 10 gallons of water per day = 20 gallons of water consumed per day.

20 gallons x 60 days of storage = 1,200 gallons of water storage needed as a minimum.

Capturing 1,200 gallons of water in a 1" rainfall requires a 2,000-square-foot roof (2,000 sq' x .6 gal/1" rainfall = 1,200 gallons).

**WILDLIFE**  
**BOXES**



Enhance your backyard habitat and support the District's education fund by purchasing bird feeders and habitat boxes for bluebirds, wrens, bats and butterflies. Wildlife habitat boxes make great holiday gifts! See a full price list on our website: [www.h-cswcd.org](http://www.h-cswcd.org). Call or e-mail the District to place your order: 804.537.5225 x102 or [Rebecca.Jones@va.nacdnet.net](mailto:Rebecca.Jones@va.nacdnet.net)



**Conservation  
Equipment  
Rental**



Are you interested in better soil quality, water infiltration and residue management? If so, take advantage of the benefits of no-till planting. Contact the District office to inquire about renting a no-till drill (7 or 10-foot). The minimum rental rate is \$100 plus tax, which covers the first 10 acres. Each additional acre is \$7 plus tax.



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