

Newer systems irrigate small parcels, irregularly shaped fields

By Dan Murdock

Irrigation can greatly increase pasture and crop productivity.

For acreages blessed with sufficient water and suitable ground, knowing how to irrigate is important: the choice of the particular delivery system design is critical.

New products have been developed in the last decade to irrigate small parcels. The following examines the advantages and disadvantages of using a SuperStand or a pod line irrigation system. Each requires periodically moving the system.

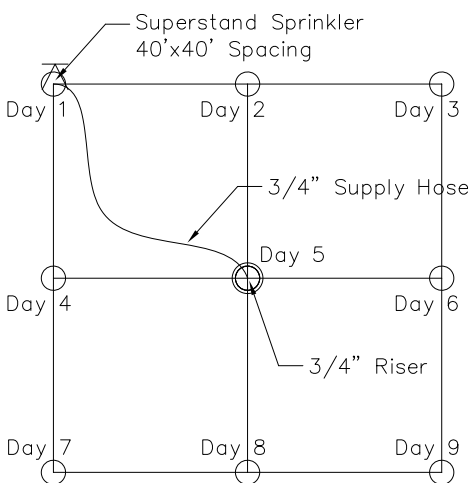


Diagram 1

Whatever system chosen, remember that the type of soil, the amount of water the crop – such as grass – requires, and how often irrigation is needed, play a large role in determining the amount of water to apply. Irrigated pasture will transpire an average of 1 to 1.5 inches each week. The design of the system will need to meet this weekly demand.

SuperStand Sprinklers

SuperStand sprinkler systems are comprised of a fiberglass or aluminum stand with a brass impact or plastic Wobbler sprinkler nozzle. The stand is moved and let run for a specified amount of time. This system is usually moved every 12 or 24 hours. How much time it is kept in one spot is determined by the irrigation frequency, soils, crops being grown, and available labor to move the system.

Spacing is typically 40 x 40 feet with a 3/4-inch garden hose supply line. The nozzle flow-rate ranges from 3.5 to 6 gallons per minute clay to sandy loam. Diagram 1 at left shows an example layout and daily sprinkler locations. There is an overlap of coverage and typically spacing sprinklers



Photo 1. A pod and sprinkler.

at 40 feet x 40 feet provides uniform irrigation.

Advantages of this system are its portability and ability to fit any geometric shape. Wobbler sprinkler nozzles increase application uniformity due to their even spray patterns.

Advantages

- Can be tailored to fit non-square fields. Fits small-acreage systems; each system will irrigate approximately 0.15 acres per stand.
- Easily moved by hand; no special equipment needed.
- Layout accomplished with measuring tape.
- Uses common hoses and fittings.

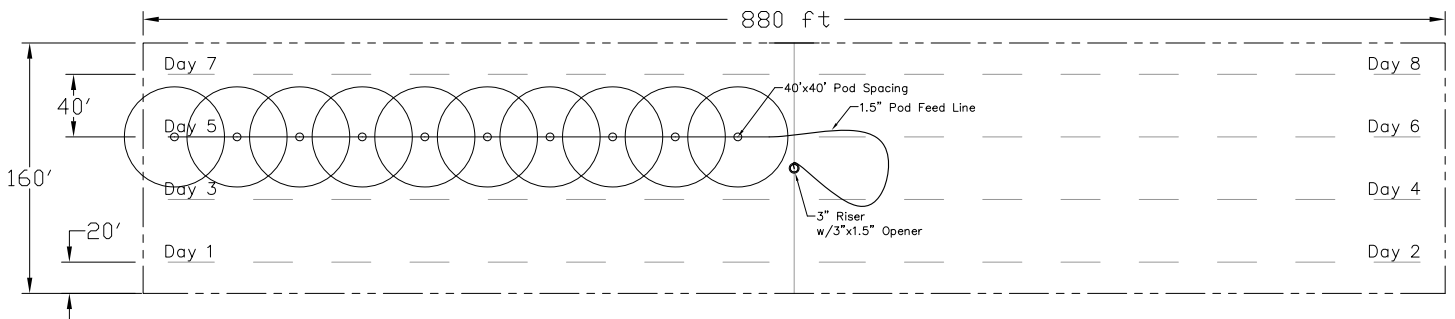


Diagram 2

- Utilizes lower pressure; minimum for most nozzles is 20-25 psi.

Disadvantages

- Typical irrigation frequency is about nine days for clay loam soil on irrigated pasture using a 3-gallon per minute nozzle, a 23 ½-hour set, and applying 3.8 inches of water each rotation. The application rate, the water-holding capacity of the soil, and the crop water requirements determine actual frequency.
- Requires daily manual labor during irrigation season.



A pod sprinkler system is watering a pasture.

Pod Irrigation Sprinklers

A pod sprinkler system is comprised of High Density Polyethylene/Polyvinyl Chloride (HDPE/PVC) pods (see Photo 1 page 24). Each pod with a sprinkler head is connected in a row by a HDPE line, which is then connected to a riser (a short pipe in which the water travels from the buried irrigation supply line to the ground's surface) in the center of the irrigated parcel.



Photo 2. A pod line at work.

The line of pods is typically moved once a day from one end of the field to the other (see Diagram 2 page 24). Spacing is typically 40 x 40 feet with a 1.5-inch HDPE line connecting up to 12 pods. The typical flow-rate ranges from 2 to 3.5 gallons per minute at 25 psi. Photo 2 lower left shows a typical pod line.

This system is best for already-grazed pastures. The line of pods is towed to a new location while in operation.

Advantages

- Can be tailored to fit non-square fields.
- Easily moved. A four-wheeler or other equipment can move the system.
- Layout accomplished with measuring tape.
- Uses common hoses and fittings.

Disadvantages

- Maximum pod line length is about 400 feet, and maximum field length is about 880 feet. Pod line length is determined by the flow rate in the pod line, the

The most common small-acreage irrigation issue is over-watering.

water-holding capacity of the soil, and the crop water requirements.

- Maximum irrigated width, based on an eight-day irrigation frequency for pasture, is typically 180 feet.
- Based on the above size, this system will irrigate 3.6 acres.
- Requires daily manual labor during the irrigation season.
- Not suited for annually tilled crops. Each pod line relocation requires a sod bed for a vehicle towing the line.
- Planning and sizing of the system is required. This may be done by the dealer or other qualified technical representatives.

The use of these irrigation systems allows an operator to uniformly and efficiently apply water. Uniform and efficient application of water generally increases yields.

Have questions? **Dan Murdock** is the west Wyoming area engineer for the Natural Resources Conservation Office. He can be contacted at (307) 856-7524 or at daniel.murdock@wy.usda.gov.