Low Cost Irrigation System

Small Scale Solutions for your Farm

NRCS
Natural Resources Conservation Service

Do you have a problem with:

- Crops wilting and dying from lack of water
- Droughty soils
- Poor quality crops
- Lost income from dry weather

A low cost irrigation system can be as simple as a series of troughs or gutters moving water by gravity, or it can involve a pump and pipelines to move water to sprinklers or a drip system.

Solid set irrigation system

An Irrigation System Can:

- Give you the ability to provide water when your crops need it.
- Allow your crops to grow to their maximum potential.
- Help your crops resist diseases and harmful insects.
- Grow crops when dry weather doesn't cooperate

Micro-irrigation is efficient

Drip irrigation system

Costs:

- Cost can vary based on the availability of water and the size of the system.
- Getting water can cost a lot if you have to drill a well or build a pond.
- Small systems which are operated by manual labor and gravity flow can cost as little as $50 and irrigate a small garden.
- Larger systems requiring pumps and permanent piping can cost from $1800 to $2500 an acre.
- All irrigation systems will cost you time to operate and manage.

Low Cost Irrigation Systems

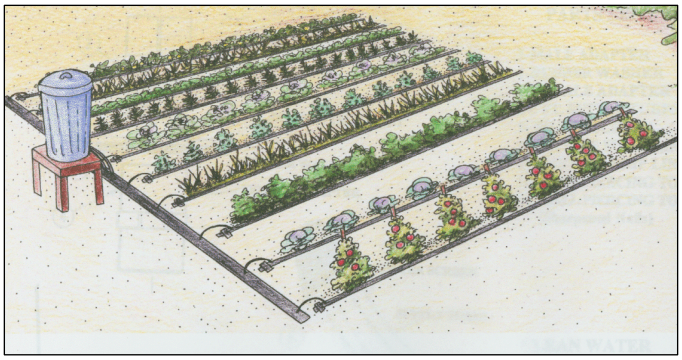
Dividing solid set irrigation systems into smaller zones can be accomplished by use of an irrigation manifold

Sprinkler Irrigation

- Sprinkler Irrigation systems spray water into the air.
- Properly spaced, the sprinklers apply the water evenly over the irrigated area.
- Sprinkler systems are less efficient than drip systems.
- Wind will affect the uniformity of the irrigation.
- Sprinkler systems generally require high volumes of water at high pressure.
- Household wells of around 6 gpm can only supply enough water to run about 2 sprinklers at a time. By using portable sprinklers and moving them, you should be able to irrigate 1/2 acre.
- Larger fields will require a larger supply of water (large well, or pond), a pump and portable or permanent piping network. You can zone the field to make better use of the pump and water supply.

Drip Irrigation

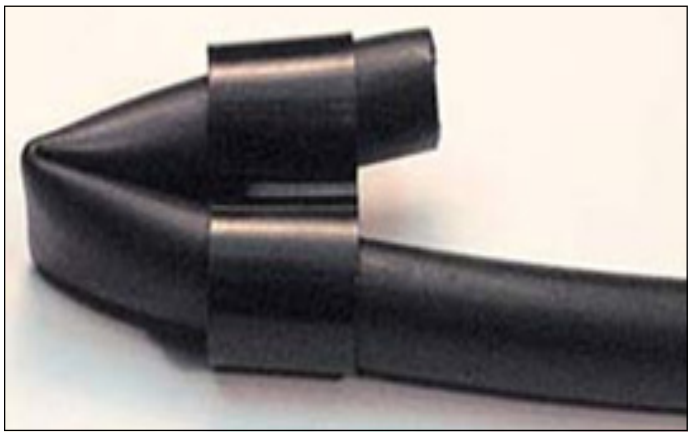
- Drip irrigation systems deliver water to your crops at a slow rate, without wetting the plant.
- Pond or stream water will require expensive filters to prevent clogging of the system.
- Drip systems using well or city water usually require less filtration
- Water is pumped in pipes or is carried to the field in tanks. An irrigation system may use valves to separate fields into zones. This allows a limited water source to provide water to a large area by watering one part at a time.



Drip irrigation systems can operate by gravity. This system is inexpensive but it can irrigate only a small plot of land 35' x 35'.
Larger fields will require a pump. A drip irrigation system that supplies water to a small field only needs a small pump.

How to Install Sprinkler Irrigation

- The pipe must be rated for the pressure the pump will create.
- Use glue or fittings specified by the manufacturer of the pipe for connections.
- A trencher may be needed for installing buried mains and risers.
- Thrust blocks will be needed where the line changes direction, and at line ends. You can excavate the required size hole and pour concrete around the pipe to create the thrust block.
- Use a back flow valve to protect the water supply from contamination.
  Portable pipe with sprinklers attached can be used in the field, and moved to where they are needed.



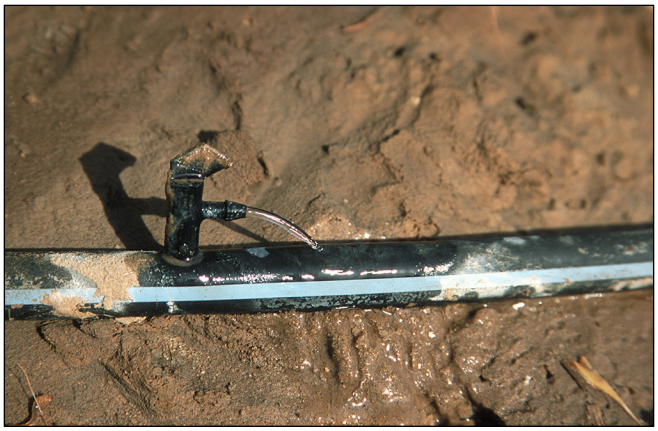
'Figure 8 End Closure'

How to Install Drip Irrigation

- First bring the source of water to the field.
- Connect the back flow check valve, a pressure reducer, and the filter, making sure the arrows on these devices are pointing in the right direction.
- Use plumbers tape on all threaded connections. Use clamps or glue on "T"s, "L"s & valves.
- Test the system for water flow, before connecting the main line to the filter and the laterals.
- Use stakes to keep lines in position.
- Test the system for water flow again before connecting the drip lines.
- At the end of each run, always double back the line using a "figure 8, end closure" or use removable end caps to allow for frequent line flushing to avoid clogging.

How to Maintain Irrigation Systems

- Check that sprinklers or the drip emitters are functioning properly, and unclog any that are not.
- Filters must be cleaned when the pressure drop across it exceeds 3 to 5 PSI.
- On drip lines, the ends need to be opened frequently to flush them.
- Chemical treatment may be needed if algae or chemical reactions cause clogging.



Drip irrigation

Help is Available

NRCS Natural Resources Conservation Service

SMALL SCALE SOLUTIONS FOR YOUR FARM

Technical Help Is Available

Your local Natural Resources Conservation Service (NRCS) office has experienced conservationists that can assist you with your low cost irrigation system. They can also help you develop a Conservation Plan to solve other problems you have identified on your farm.

There is no charge for our assistance. Simply call your local office at the number listed below to set up an appointment and we will come to your farm.

You may also be eligible to receive financial assistance, through a state or federal program. Your NRCS office will explain any programs that are available so you can make the best decision for your operation. All NRCS programs and services are voluntary.

Helping People Help the Land

For More Information Contact the:

Natural Resources Conservation Service

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Warwick, RI 02886
(401) 828-1300
Web Address: www.ri.nrcs.usda.gov
E-mail Address: NRCSInfo@ri.usda.gov

NRCS accepts applications on a continuous basis throughout the year.

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