



# IRRIGATE Your Garden

Prepared by:  
Daniel J. McLellan  
Extension Water Use Agent

**DON'T WAIT  
FOR A RAINY DAY...**



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# IRRIGATE YOUR GARDEN

In years of good rainfall an irrigated garden should out-produce a non-irrigated garden two to one. During years when rainfall is low, irrigation may mean the difference between an excellent garden, and no garden at all.

## SOIL FOR YOUR GARDEN

If you have a choice of soils for your garden, the medium-textured, well drained soil is best. Usually the garden is near the house, and there may be only one kind of soil.

If you are careful, nearly any kind of soil can be irrigated if the water is good. Here are some important things to remember.

1. Put water on heavy soils very slowly after the ground is soaked. If irrigated too fast the water will puddle and harm the plants.

2. Light soils can't store very much water. If you put on more water than the plant needs you are wasting water and plant food. If your soil is light, plan on watering it often and not very heavily.

3. Poorly drained soils are not good soils to irrigate. If the soil is dry, though, you can add water carefully. Be sure that you don't get it too wet. If the normal moisture is enough, don't try to irrigate a poorly drained soil.

## WATER FOR IRRIGATION

Not all water is the same. Water from wells, lakes or streams has tiny particles in it. Some of these particles are dissolved in the water and are called salts. Some salts are are harmful to plants and soils and some are harmless.

Water having harmful salts should not be used on your garden. When water is put on the ground it is used by the plant. The salts are left in the soil. When more water is used, more salts are left. Too much of the wrong kind of salts in the soil can injure the plant or seal the soil. Either condition will ruin your garden.

One of the most harmful salts is sodium. Sodium makes water soft. If your spring or well water is soft be sure to find out if it can be safely used on a garden.

Much of the water in North Dakota is good water for irrigation. The only way to be sure it is good is to have it tested. Your county extension agent can have a quart sample tested for you. Be sure the jar you take the sample in is absolutely clean.

Temperature of water, under natural conditions, has no appreciable effect on the plants.

REMEMBER, good drinking water is not always good irrigating water.

If your water tests "questionable for irrigation" it can be used if you arrange two garden sites and summerfallow one each year. Heavy applications of barnyard manure will overcome the bad effects of salts that the water leaves in the soil.

### SURFACE IRRIGATION METHODS

Surface irrigation means putting water on the soil by gravity (letting it flow downhill in furrows between rows). To irrigate this way your garden should be quite smooth, and be steep enough for water to flow. Best results will be on slopes between 4 inches in 100 feet and 5 feet in 100 feet. When the surface of the garden is a little uneven it may be possible to level it enough to irrigate.

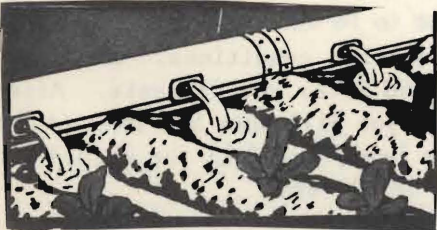


Fig. 1 GATED PIPE MAKES SURFACE IRRIGATION EASIER

Furrows should run along vegetable rows. You may need to change the direction of the rows in your present garden so the furrows will run downhill. A garden plot suitable for surface irrigation can be found on almost any farm in North Dakota.

Space rows the same as that recommended in Extension Circular A-1 "Garden Varieties for North Dakota".

Another way to improve moisture conditions in your garden does not involve irrigation. It is done by a windbreak of corn rows, an open hedge such as caragana or slat snow fence arranged so the winter snowfall will pile up on your garden site. The extra moisture provided by the melted snow will go far in improving soil moisture in your garden.

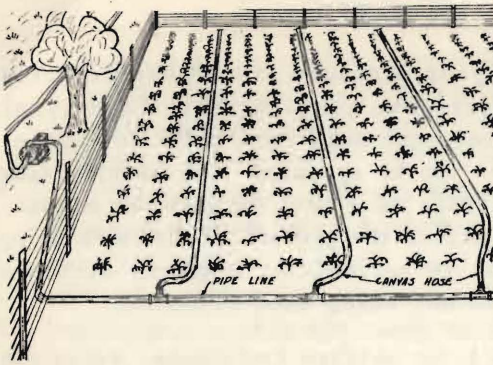
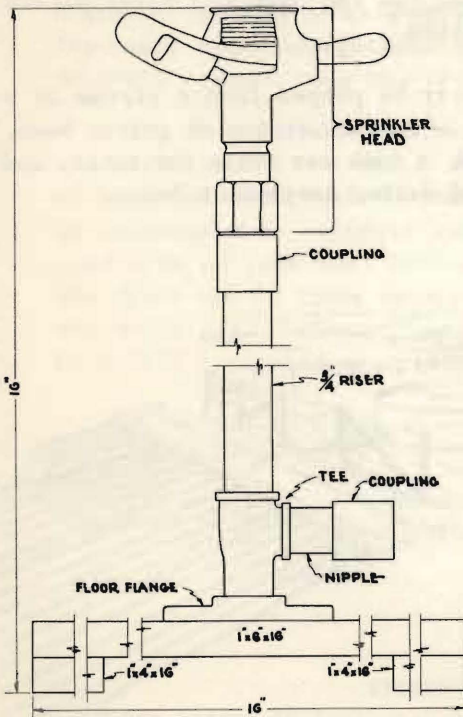


Fig. 2 IRRIGATING A GARDEN WITH POROUS HOSE

**POROUS HOSE:** Porous hose is made of canvas. As water pressure builds up in the hose, the water oozes out. Hose can be laid along rows in the garden, and can be picked up and moved to other rows. Hose can be used on land too uneven to use furrows for carrying the water.

### SPRINKLER IRRIGATION METHODS

Sprinkler irrigation means delivering water under pressure to a sprinkler that distributes the water in an even pattern. The amount of ground covered by a sprinkler depends on the pressure of the water.



For the best results, use a commercial low-pressure rotating sprinkler head. It can be attached to an ordinary length of 3/4-inch pipe (or riser). If the garden can be planned so the sprinkler may be used without placing it in corn, a height of about 16 inches is recommended. If the sprinkler must be placed in corn, a longer riser will be necessary.

**CAUTION:** Some garden crops are susceptible to diseases that are favored by wet foliage. Where possible, beans, potatoes, and tomatoes should be irrigated by furrows or porous hose.

Fig. 3

## SOURCES OF WATER

PRESSURE SYSTEM: If your pressure system has capacity enough you can sprinkler-irrigate your garden. Commercial sprinkler irrigation manufacturers make excellent, low-angle, low-pressure sprinklers that can be operated successfully from a pressure system with as little as 3 to 4 gallons per minute. Any change in pressure will affect the pattern of the area being sprinkled, so it may be best to sprinkle at night or at times during the day when water is not being used elsewhere.

If your ground lays well for surface irrigation, water can be stored in a tank at night and the garden can be irrigated when it is convenient. Surface irrigation can be accomplished by running the hose direct to the furrows, but it may lower water pressure on the rest of the system during hours of heavy use.

FARM POND: Water can be pumped from a farm pond into a surface system, a sprinkler system or porous hose. If the garden is lower than the pond, you can pipe the water direct to the garden into surface system.

STREAM OR WELL: Water may be pumped from a stream or a well into a sprinkler system, a surface system or porous hose. If a low capacity well is used, a tank can store the water, and surface irrigation can be used during convenient hours.

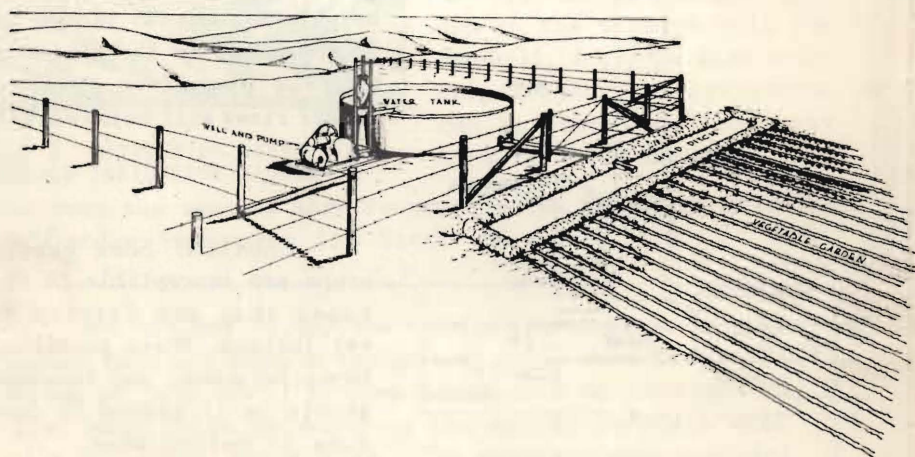


Fig. 4 A TANK CAN BE USED TO STORE WATER

## HOW TO IRRIGATE

No matter what method you use to put water on your garden, the important thing is to keep the soil moist enough to get the best possible yield from the garden.

Farm garden crops may take nearly all their moisture from the top 2 feet of soil. If this soil is kept moist you can expect excellent yields. Usually, a garden is ready to irrigate when the soil is not damp enough to ball up in your hand. The exceptions to this are sandy soils which won't ball up, and clay soils which will ball up even though needing water. Do not wait to irrigate until the plants start to suffer. By doing so you reduce your garden's yield.

You can tell when the water has penetrated 2 feet by pushing a sharpened pole about the size of a shovel handle into the ground. When it hits dry soil it will be hard to push. A piece of reinforcing rod makes a good probe, too.

It doesn't do the plants any good to get too much water. A simple test can be made by squeezing a sample of soil taken a few hours after irrigation. If water comes out, there is more moisture present than the plants can take.

The time and amount of irrigation should be determined by the condition of the soil. Plants can use up to 1-1/2 inches of water per week, and the amount to be added by irrigation will be determined by rainfall and weather conditions. Check the condition of your soil before and after you irrigate. After the first two or three waterings you will know how long to let the water run. Unless there is heavy rainfall the garden can be safely irrigated every week or 10 days.

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Material prepared with assistance of Dr. Joseph H. Schultz

### EXTENSION SERVICE

NORTH DAKOTA AGRICULTURAL COLLEGE AND U. S. DEPARTMENT OF  
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E. J. Haslerud, Director, Fargo, North Dakota

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