

HOW TO GET MOST EFFICIENT USE OF WATER

Sprinkler Irrigation

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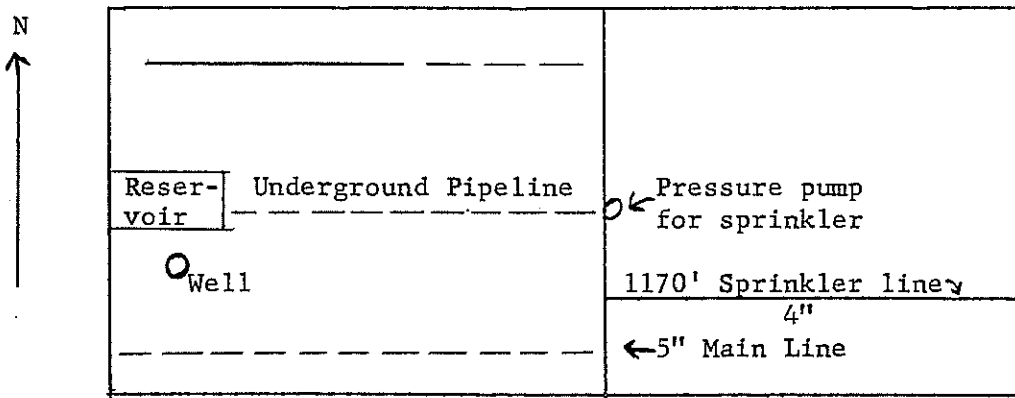
Much time has been devoted during this conference to the importance of water, water laws, water rights, administrative problems and other items.

Now, as a farmer, I would like to discuss with you the use of water for agricultural purposes and the actual mechanics of application, particularly sprinkler irrigation.

Certainly it should be the goal of every irrigation farmer to take the minimum amount of water required for a given crop and distribute it evenly throughout the field for a maximum economic yield. No doubt every farmer has watched a hard rain amounting to several inches fall on his land with the resulting erosion and heavy runoff and thought to himself: How wonderful it would be if such a rain fell slow enough so that there would be no runoff. Sprinkler irrigation comes very close to such an ideal situation.

I have been questioned many times about my reasons for going to sprinkler irrigation in an area where sprinkling is practically unknown.

My problem was as simple as this. I owned 75 acres of fertile land with a well producing around 500-550 gallons per minute, which is ample, figuring 7 gal. per minute per acre and using a reservoir for overnight storage. However, soil permeability became so great that it was taking about two acre feet of water per acre to push the water over the land each irrigation even with very short runs. By installing sprinkler irrigation I am able to put on the desired amount of water and cover the entire farm in a reasonable length of time with uniform distribution to each acre.



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The tract of land being irrigated is an 80 acre plot with approximately 2 acres cut off either end. The well and storage reservoir are located in the center of upper end of the rectangular block.

In order to attain the most practical and economical layout for the sprinkler system, an underground pipeline was laid to the exact center of the block where a pump for furnishing pressure to the sprinkler system is connected to the underground line. From this pump a 5" aluminum main line extends to either side of the field and two 4 inch sprinkler lines operate at right angles from the main line with sprinklers spaced at 30 feet along the sprinkler lines. The main line is in alternate 20 and 30 foot joints thus making it possible to make moves of 20, 30, 40 or 50 feet as desired.

The system was designed for an application rate of about four tenths of an inch an hour with fifty foot settings on sprinkler lines and a pressure of 35 lbs/sq in. Knowing this information it is quite easy to calculate time necessary to put on any desired amount of water per irrigation.

The total cost of the sprinkler installation excluding underground pipeline from reservoir to sprinkler pump came to about \$5445.00 or \$80.00 per acre.

Certainly lined ditches syphon tubes, gated pipe and other modern devices have greatly increased irrigation efficiency. They have made it possible to evenly distribute the water across the upper end of a field being irrigated, but the problem of uneven penetration as the water passes over the land still exists under such methods. Sprinkler irrigation reduces this last problem since the water is distributed evenly over the entire field.

One of the first questions that arises at the mention of sprinkler irrigation in an arid climate is excessive evaporation. From observation and experience I am convinced that after the first few minutes a line of sprinklers is in operation an artificial humidity is built up within the area being sprinkled and evaporation is reduced to a lower level thus bringing the losses well within limits experienced by other methods of irrigation. Of course in case of brisk winds some of this advantage may be lost.

Since the water is conveyed in closed conduits throughout the system until it is delivered to each sprinkler head, it is easy to conceive that total losses might be less than by other irrigation methods.

The crop yields under sprinkler irrigation have been very satisfactory. In 1956 I produced 2-3/4 bales of cotton per acre on one half of this farm and 6.4 tons of alfalfa per acre on the other half. This is considerably more with less water than I produced on a similar farm nearby under gravity irrigation.

The cost of operation of the system is not excessive. Six dollars a day (24 hrs.) will operate the extra pump required to furnish pressure to the system, which just about equals an irrigator's wages to tend the water using

the flood or furrow method. Approximately one man/hour of labor is required per acre each irrigation for moving the sprinkler lines. This is generally done early in the morning and late evening thus leaving labor free for other work during the day.

In closing I think we could say that sprinkler irrigation is certainly an efficient method of applying water to the land, especially if the land is uneven in slope or the head of water is not too large. It may not be the answer to everyone's problems but surely deserves consideration if some of the above mentioned problems exist.