

Furrow Irrigation Web Tool Manual

Step1

Select the dominant Soil Type at your farm from the dropdown list.

Step 2

Select the dominant Crop Group that is irrigated with the furrows at your farm.

Note : The data is taken from the standard tables (Refer to References 2). The corresponding efficiency and time of application data is available for certain combination of Soil and Crop Types. When *Brennan* Soil is selected the data is available only if *Cotton* is selected under Crop Type and when *Delfina fsl* Soil Type is selected the data is available only if *Tomatoes, Cotton, Soy Beans* and *Melons* is selected under Crop Type.

Step 3

Enter the Furrow length (Refer to the Figure) which is the length of each furrow.

Note : After giving tool these 3 inputs you can either continue with Step 4 to get more information about irrigating your farm or click Compute to get Time of Application and Efficiency .

Step 4

Enter the total outflow discharge (Refer to the figure) delivered to your farm from the farm turnout.

Step 5

Select the dominant width (Refer to the Figure) of each furrow at your farm. The data in the tables (Refer to References) are derived only for certain types of furrow widths. These are 40 in and 60 in.

Step 6

Enter the total width (Refer to the Figure) of the farm.

Step 7

Click Compute to see the results.

Output

Using the design guidelines of the 1983 NRCS *Engineering Field Manual, Appendix B*, it is determined that a flow rate of 50 gpm/row produces the maximum on-farm irrigation efficiency. These guidelines were specifically developed for furrow irrigation in the Harlingen area of the Lower Rio Grande Valley of Texas (Refer to References -1). These are also used in our analysis. In this study the total discharge is assumed as 50 gpm discharge for each 40 in width furrow and 75 gpm for each 60 in width furrow.. This flow rate provides the highest efficiency possible on the four soil types in the project area. These discharges are assumed to exist at the furrows. Intake curve values are determined for each Soil Type and Net application values are determined by using Soil Type and Crop Type. In the tables (Refer to References 2) time of efficiency and time of application values are given for each intake curve and net application set for the discharges 50 gpm and 75 gpm for 40" and 60" wide furrows. For each set an equation is fit to be able to determine time of efficiency and time of application values for any Furrow Length value between 200 and 1500 ft.

1- Efficiency

Efficiency is the ratio of the irrigation discharge in each furrow to the total discharge given to each furrow.

2- Time of Application

Time of Application is the duration which you implement irrigation at your furrows in each set. It is the time of irrigating each set.

3- Number of Irrigation Set

The total discharge can irrigate some portion of the farm effectively. So the farm should be divided into the sets to irrigate

At NRCS tables certain types of soils and crop groups are included and the efficiency and time of application values are given for these only.