USING A FLOW METER TO DETERMINE THE IRRIGATION SYSTEM APPLICATION RATE

Understanding your systems water application rate allows you to compare your estimated application to actual applied water, a key component of irrigation scheduling.

A flow meter readout usually has a totalizing register recording the total flow (gallons, cubic feet, ac – in, etc.) passing through the meter. Many meters also have an instantaneous flow rate indicator (gpm, cfs, etc.) on the readout. The most reliable flow rate value comes from noting the change in the totalized flow across a known time interval rather than using the instantaneous readings. For example, if a flow meter measured 30,000 gallons passing through it in one hour, the flow rate would be 500 gpm.

Frequently, it is very useful to determine the application rate (in/hr) from the flow meter information.

Formulas for Calculating Irrigation System Application Rate
gpm ÷ area irrigated (acres) x 0.0022 = in/hr
cfs ÷ area irrigated (acres) x 0.992 = in/hr
gallons \div time period over which measured (min) \div acres irrigated x 0.0022 = in/hr
cubic feet \div time period over which measured (min) \div acres irrigated x 0.0165 = in/hr
$_{}$ ac - ft \div time period over which measured (min) \div acres irrigated x 720 = $_{}$ in/hr

Flow Meter with Instantaneous Rate Readout

This handy formula is used to determine the inches of water applied during an irrigation:





Flow Meter Readout in Total Gallons

The totalizing register of many flow meters displays in gallons. If reading the totalized flow at the beginning and end of an irrigation to determine the total gallons of water applied, the total gallons applied can be converted to inches of applied water using this formula:

Flow Meter Readout in Acre-Inches

In some cases, the totalizing register of the flow meter will record in acre-inches. Those readings can be easily converted to inches of applied water using this formula:

Useful Unit Conversions:

1 cubic foot = 7.48 gallons

1 gallon = 3.785 liters

1 cubic meter = 264 gallons

1 ac-ft = 325,851 gallons = 43,560 cubic feet

1 acre = 0.4 hectare = 43,560 square feet

1 cubic foot per second (cfs) = 449 gallons per minute (gpm)

450 gpm for 1 hour = 1 ac - in per hour

Visit Almonds.com/Irrigation to learn more about available irrigation resources, including the Irrigation Calculator.

