

Arizona Agriculture

From the Cooperative Extension Agriculture Team at the University of Arizona College of Agriculture and Life Sciences

Measuring Water Applications

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One of the challenges in using surface irrigation systems is determining the effective amount of water applied to a field. To get a good estimate, you must first calculate the gross amount of water applied and then, taking into system efficiencies, determine the amount of effective water applied (what the plants actually receive). The first step is to determine flow rate. For those using siphon tubes, you can just count tubes; others might be more fortunate to have turnout meters or measuring flumes in their systems.

For information on various methods for measuring flow rates, got to <http://cals.arizona.edu/pubs/water/az1329.pdf>. The amount of water applied is calculated by first measuring the flow rate, recording the time and then determining the acreage the water is applied to. Using the Irrigator's Irrigation [$Qt=dA$ – Flow (cfs) times Time (hours) equals depth (inches) times Area (acres)], you can solve for the unknown. If you know flow (Q) and Time (t) and area (acreage – A), then you can solve for depth (d – inches).

All of this is explained in the publication “Determining the Amount of Irrigation Water Applied” (<http://ag.arizona.edu/pubs/water/az1157.pdf>).

One important aspect to this is your system efficiency. Most surface systems operate at efficiencies ranging from 70-80%, some higher and some lower. Efficiency is usually increased by shorter runs, higher flow rates and uniformed soil profiles throughout the field. The publication <http://ag.arizona.edu/pubs/water/az1157.pdf> will also have some information on that.

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