

# Why Mess With Flow Meters?

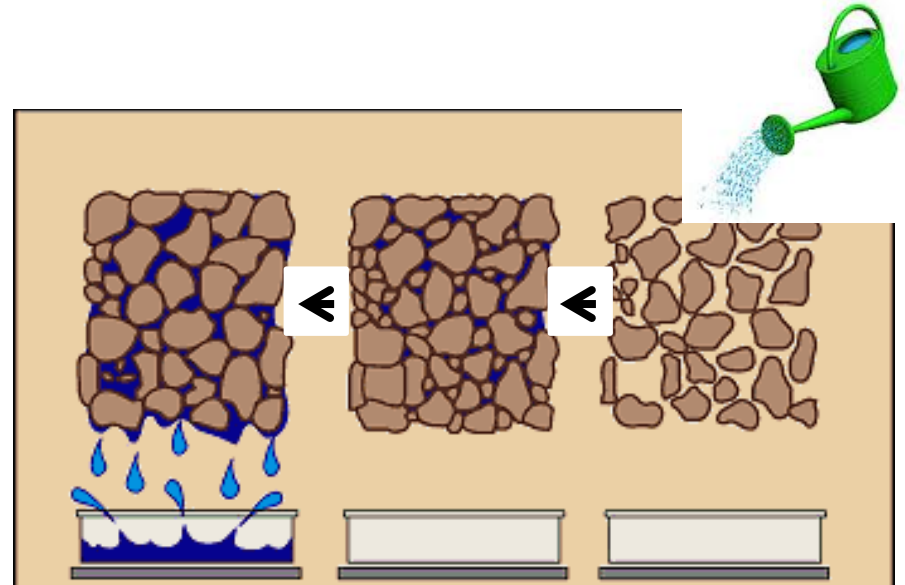
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Dan Johnson, USDA-NRCS, Davis CA

[dan.jonson@ca.usda.gov](mailto:dan.jonson@ca.usda.gov) 530 792-5625

# Why Keep Track of How Much Water You Apply?

- The soil can only hold so much water
- You want to know if the amount you apply stays in the root zone
- With this information you can compare the amount you applied to the available storage



# How Can I Determine Available Storage?

- Direct soil moisture monitoring
- Climate based crop water use (estimating water removed from soil)
- Discussed in more detail by others

**Appearance of fine sand and loamy fine sand soils at various soil moisture conditions.**

**Available Water Capacity**  
0.6-1.2 inches/foot

**Percent Available:** Currently available soil moisture as a percent of available water capacity.  
**In/ft. Depleted:** Inches of water currently needed to refill a foot of soil to field capacity.

0-25 percent available  
1.2-0.5 in./ft. depleted


Dry, loose, will hold together if not disturbed, loose sand grains on fingers with applied pressure. (Not pictured)

50-75 percent available  
0.6-0.2 in./ft. depleted

Moist, forms a weak ball with loose and aggregated sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.

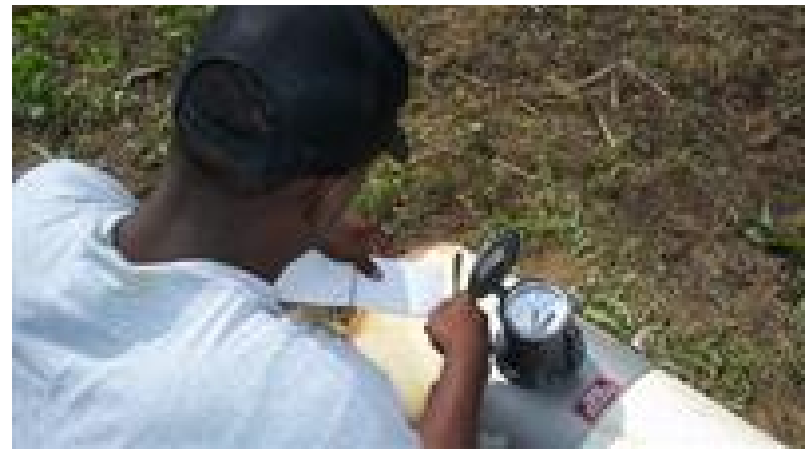
75-100 percent available  
0.3-0.0 in./ft. depleted

Wet, forms a weak ball, loose and aggregated sand grains remain on fingers, darkened color, heavy water staining on fingers, will not ribbon.



# How Can I Determine Amounts Applied?

- OK - Using the irrigation system “application rate”
- Best - Using a flow meter  
(Also helps to I.D. system problems)



# The Application Rate Method:

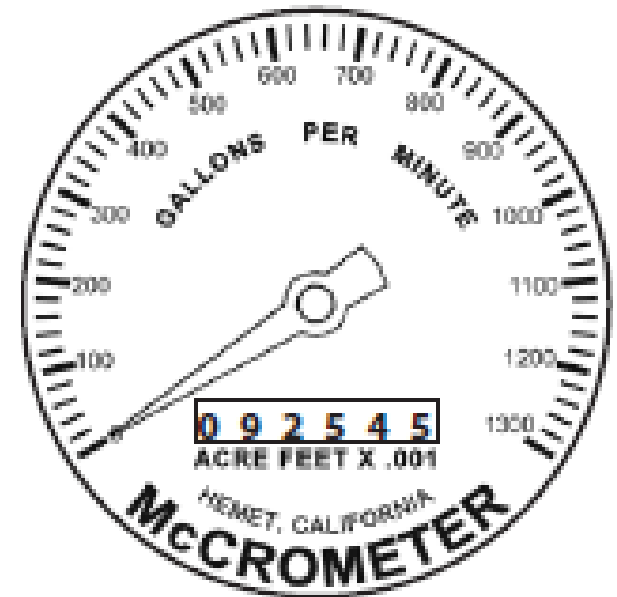
- Inches applied = Application Rate (inches/hour) X System Run Time (hours)

Example: 0.25 in/hr X 4 hr set = 1 inch application (estimate)

# The Flow Meter Method:

- Inches applied = Acre-Feet applied divided by the acres irrigated X 12 in/ft.

Example: 1.6 ac-ft X 12in/ft = 1.5 inch application  
13 ac block



# Available Storage - What If Only Part of the Soil is Wetted?

Available storage measured by direct soil moisture monitoring – Multiply by % of area wetted.

Example:

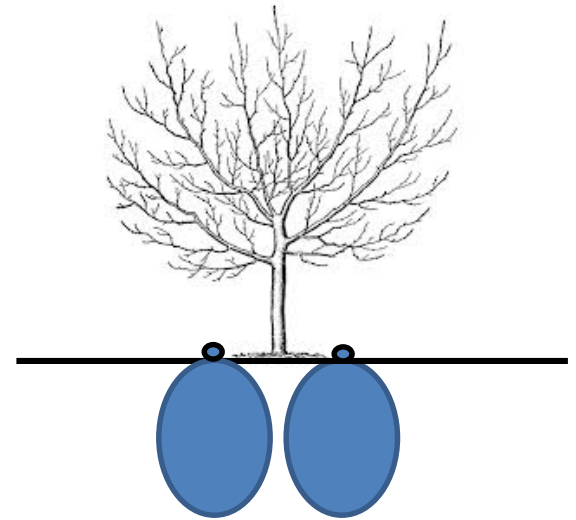
Measured available storage is 2 inches

% area wetted is 60

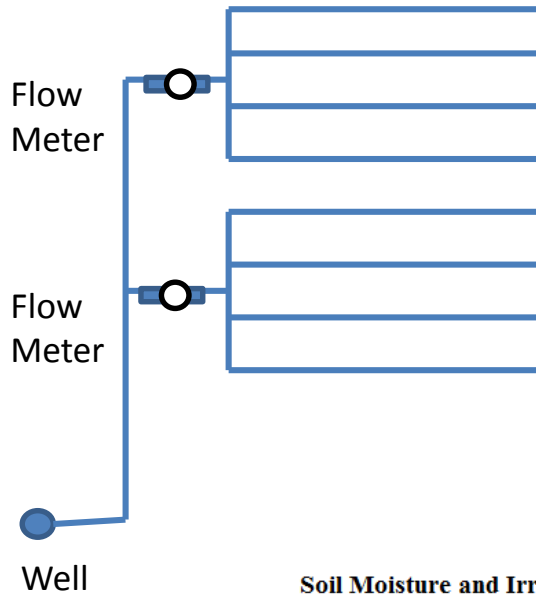
Average available storage across the field

$$= 0.60 \times 2 = \underline{1.2 \text{ inches}}$$

Available storage estimated by climate based method – No adjustment necessary



# How Can I Collect and Record Data?



**Soil Moisture and Irrigation Record**  
(High Intensity IWM)

Crop: \_\_\_\_\_ Planting Date: \_\_\_\_\_ Field: \_\_\_\_\_

<sup>1</sup> Date	<sup>2</sup> Average Rootzone Moisture Readings			<sup>3</sup> Estimated Soil Moisture Depletion (SMD) of Limiting Soil (inches)	<sup>4</sup> Threshold Depletion (inches or meter reading)	<sup>5</sup> Target Amount of Water to Apply (inches, gallons/plant, or hours)	<sup>6</sup> Actual Water Applied (inches)
	Site A	Site B	Site C				

