



University of Idaho

College of Agricultural
and Life Sciences

INTRODUCTION TO TENSIO METERS

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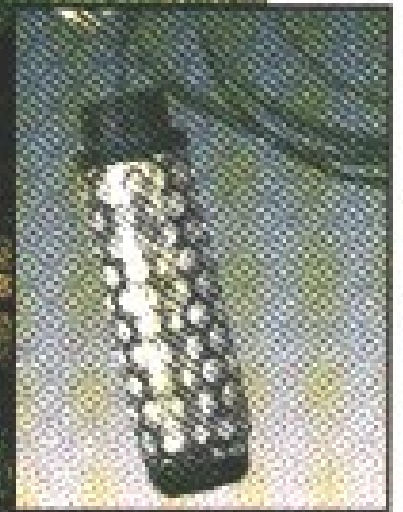
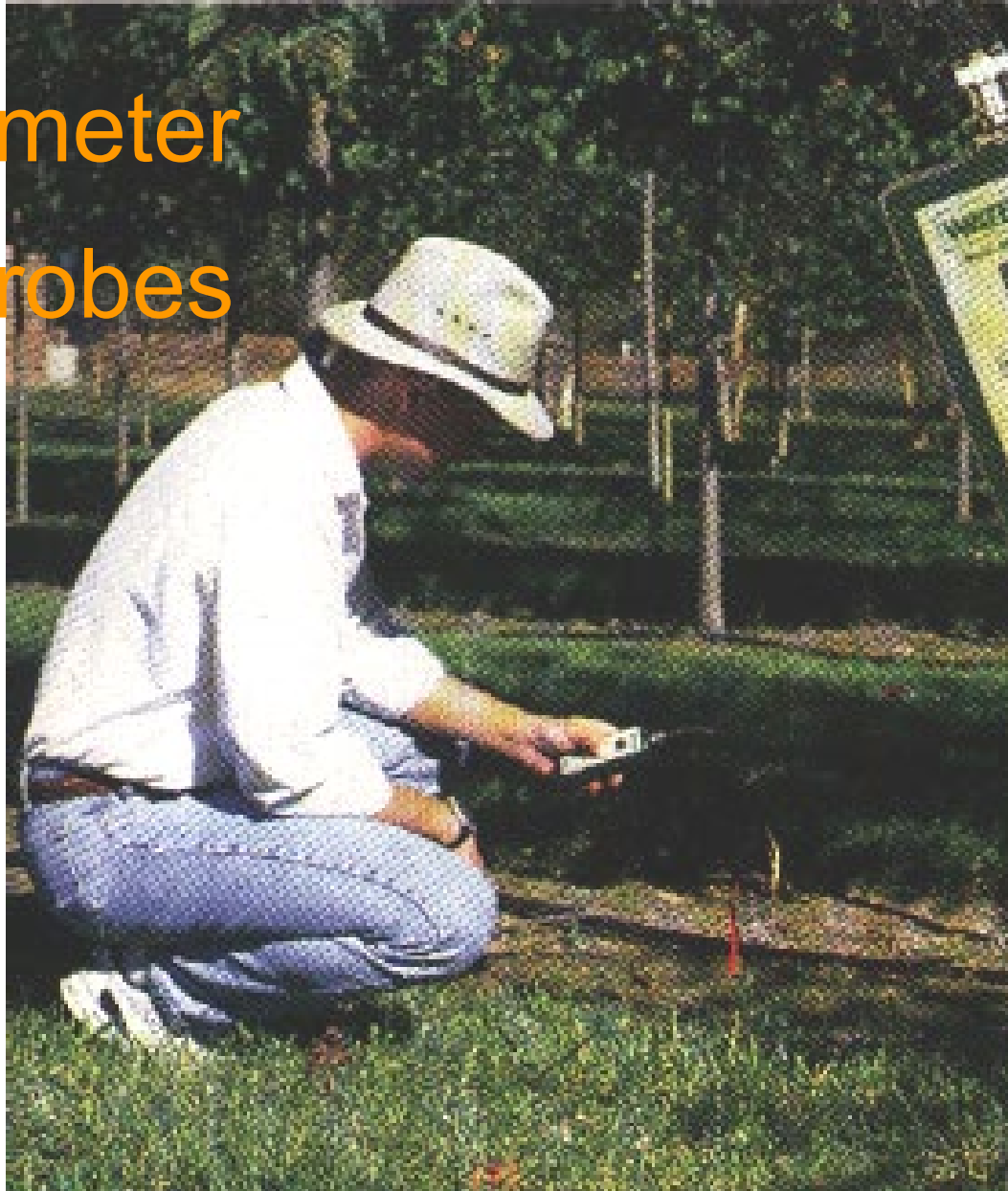
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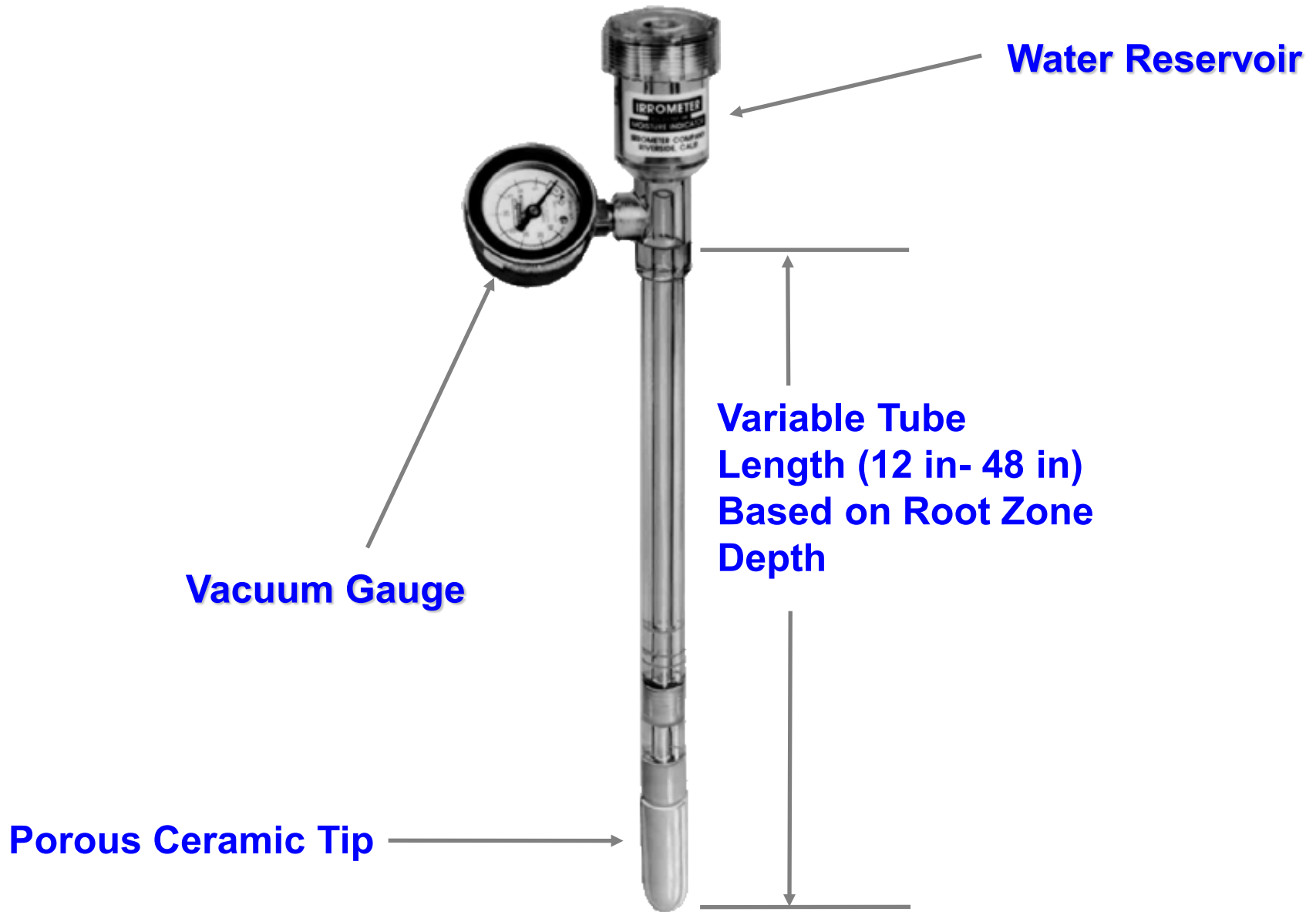
EXAMPLE: WATERMARK

\$260 for meter

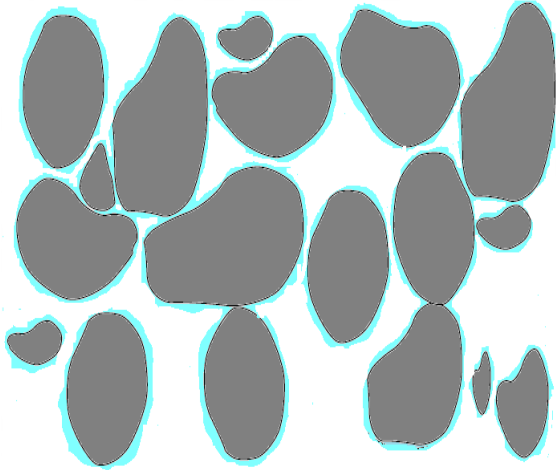
\$27 for probes



Tensiometer for Measuring Soil Water Potential



Hydroscopic Water

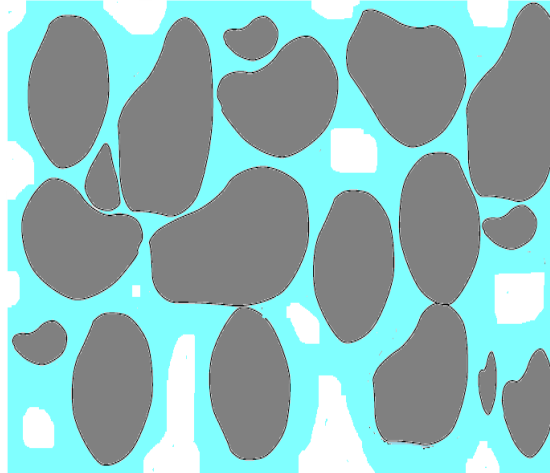


Water adheres to soil particles

Wilting Point
15 bars



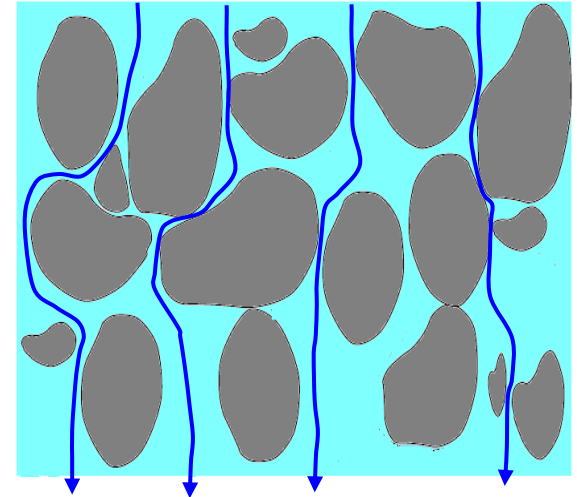
Capillary Water



Water held in large pores

Available for crop use

Gravitational Water



Water drains through soil profile



Field Capacity
1/3 bar

SOIL WATER POTENTIAL

Measure of the energy status of the soil water

Important because it reflects how hard plants must work to extract water

Units of measure are normally bars or atmospheres

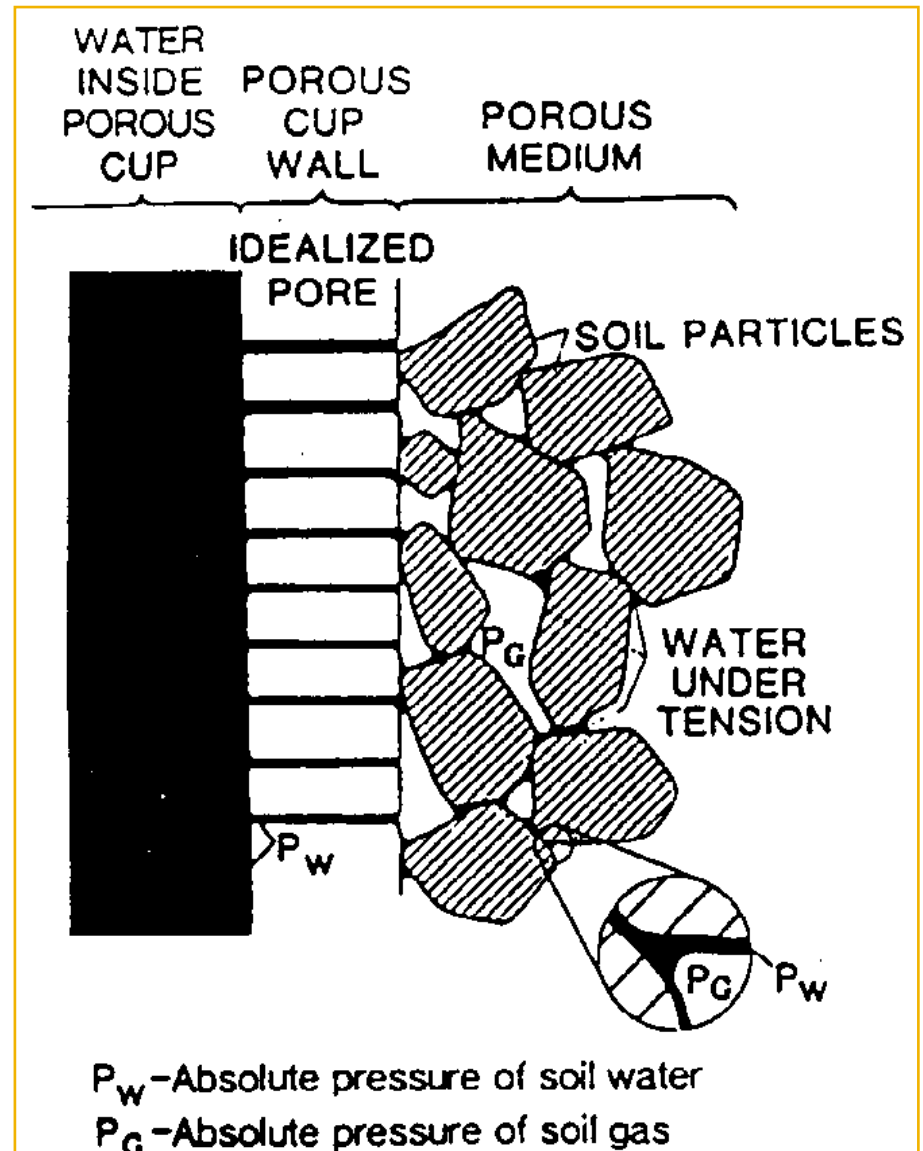
Soil water potentials are negative pressures (tension or suction)

Water flows from a higher (less negative) potential to a lower (more negative) potential

COMMUNICATING WITH SOIL: POROUS SOLIDS

THE TENSIO METER EMPLOYS A RIGID POROUS CUP TO ALLOW MEASUREMENT OF THE PRESSURE IN THE SOIL WATER.

WATER CAN MOVE FREELY ACROSS THE CUP, SO PRESSURE INSIDE IS THAT OF SOIL



PRESSURE MEASUREMENT: THE TENSIOMETER

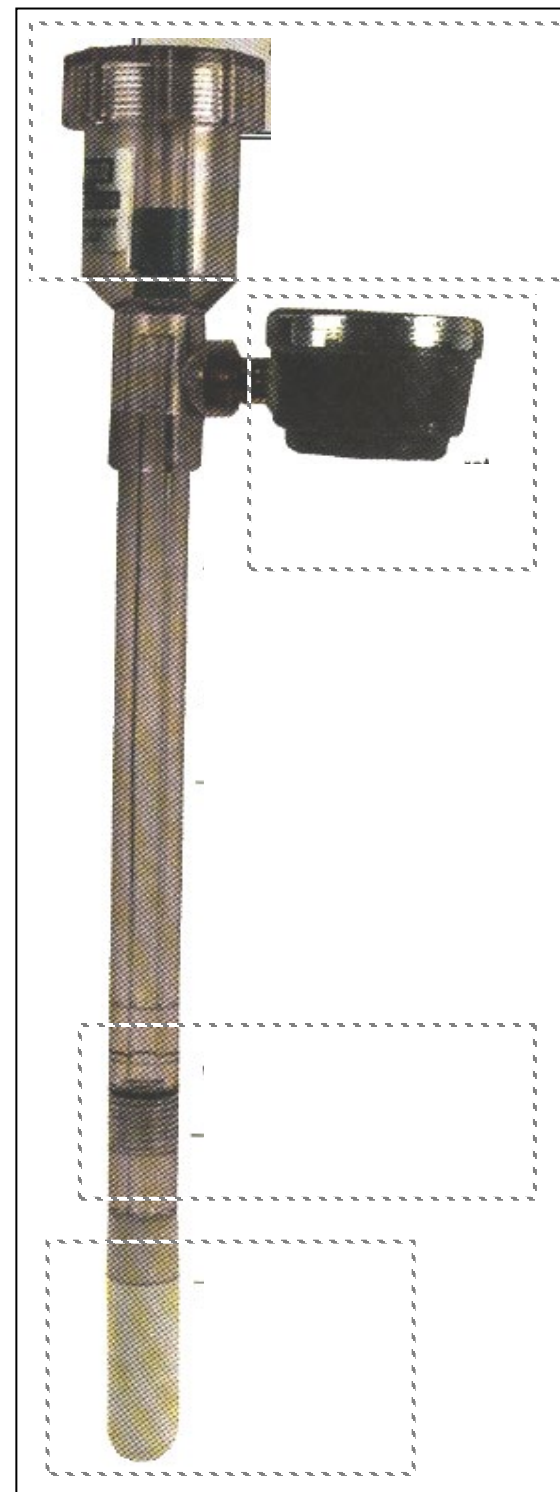
Can be made in many shapes,
sizes.

Require maintenance to keep
device full of water

Useful to -0.8 bar

Employed since 1940' s

Need replicates to be reliable
(>4)





USEFUL WEB SITES

I <https://www.ctahr.hawaii.edu/oc/freepubs/pdf/L-10.pdf>

I <https://www.uky.edu/hort/sites/www.uky.edu.hort/files/documents/HortFact7003.pdf>

I <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=30042>