

**Where
Irrigation
Decisions
Should
Be Made**

**... In The
Root Zone!**

IRROMETER

Optimizing Irrigation ... Maximizing Conservation ...
WORLDWIDE - Since 1951

Soil Water Management Products



What is an IRRMETER?

When? Where? and How Much? Is the soil too wet . . . or too dry?

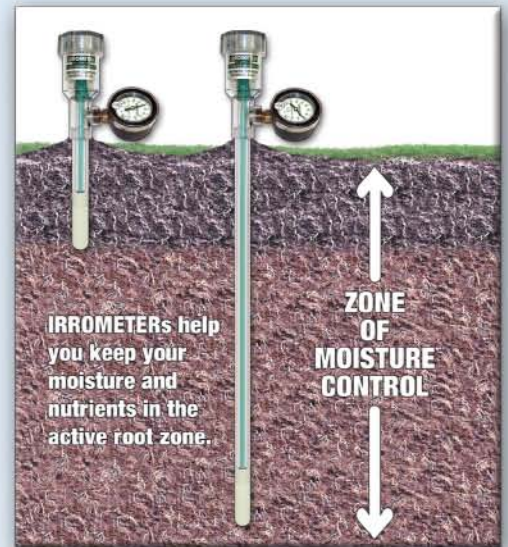
These are critical questions growers must ask themselves when scheduling irrigation. In recent years, other issues such as water availability and environmental concerns, as well as pest and disease mitigation concerns have brought additional burdens to scheduling decisions. There are many ways to answer these questions, some complicated and expensive, some simple and affordable.

While there are several methods to measure soil moisture status, many growers, scientists and irrigation consultants prefer the simplicity and accuracy of a tensiometer (or IRRMETER). The logic is simple — IRRMETERs are affordable, easy to use and leave no doubt that you are using a very accurate tool to improve scheduling efficiency.

Tensiometers were first developed by researchers in the early 20th century and the IRRMETER was introduced commercially in 1951. The instrument has a sealed, water filled plastic tube with a porous, ceramic tip that allows the exchange of water between the IRRMETER and the soil. Its gauge is calibrated for soil water tension in centibars (cb) and kilopascals (kPa).

Here's how it works — as soil dries water is drawn out of the instrument. Rain or irrigation reverses this action. A higher tension reading indicates drier soil; a lower reading indicates wetter soil. In effect, the IRRMETER shows how hard the plant is working!

The IRRMETER requires no calibration and works in all soil types. Site selection, installation and maintenance are simple. The design and high-grade materials make the IRRMETER both accurate and durable. Many models are available in several lengths to suit all crop and soil types. We also offer output options that can automate peripheral equipment, collect data automatically, and even allow viewing of soil moisture data at remote locations or on the Internet.



This two IRRMETER sensing station shows a wet reading (30 cb) at the lower depth and a dry reading (60 cb) at the shallower depth. Therefore, a short irrigation is needed.

Simple in design, but sophisticated in results, IRRMETER is the solution to your irrigation scheduling needs!



Closure – Large cap for easy operation and better control. Removes for filling reservoir. Submerged valve gives a positive leak-proof seal.

Reservoir – Holds a reserve supply of fluid sufficient for several irrigation cycles under typical operating conditions. Unscrewing cap part way releases air and fills tube to replace fluid lost by drying soil.

Ceramic Tip – Many times the strength of conventional tips. It is porous to give quick response to variations in soil moisture.

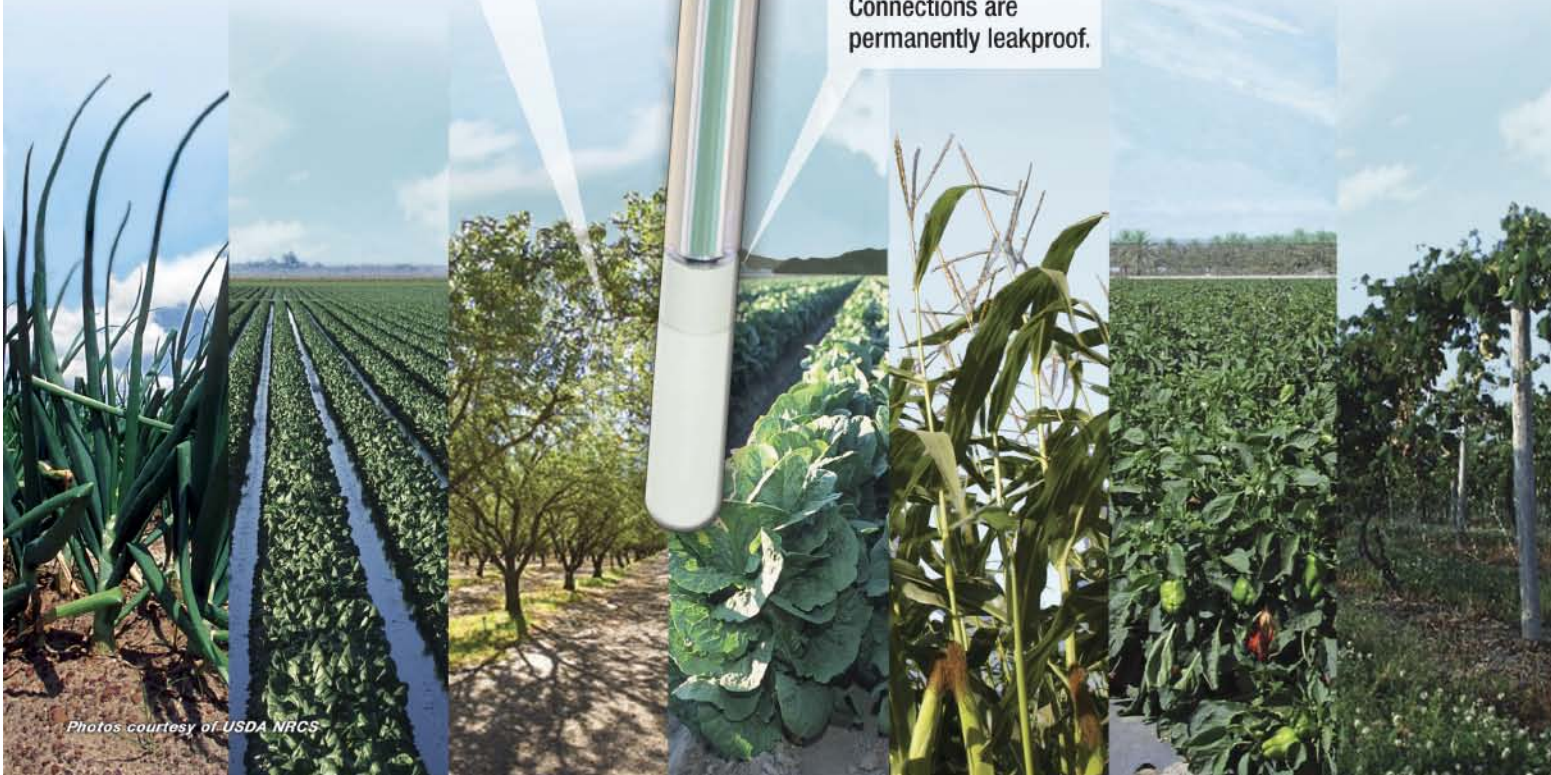


Hermetically Sealed Gauge – Accuracy and long life are ensured by a hermetically sealed neoprene cover. The molded-in diaphragm keeps dirt and moisture out and compensates for variations in temperature and barometric pressure.

Air-Free Gauge Chamber – The water seal prevents air from entering gauge, so gauge and chamber remain full regardless of fluid level in instrument.

IRROMETER Body – Constructed of tough Butyrate plastic impervious to attack by soil chemicals and electrolysis.

Ceramic to Plastic – Connections are permanently leakproof.





Model R

- 0-100 cb (kPa) range gauge
- Fixed ceramic tip is an economical choice
- Recommended for general use in most soils with row, field and tree crops managed between 10-80 cb (kPa)



Model SR

- 0-100 cb (kPa) range gauge
- Replaceable ceramic tip is easily serviced in the field
- Recommended for general use in most soils with row, field and tree crops managed between 10-80 cb (kPa)



Model S

- 0-100 cb (kPa) range gauge
- Interchangeable ceramic Extension Tips allow for easy change of instrument length
- Recommended for general use in most soils with row, field and tree crops managed between 10-80 cb (kPa)



Model LT

- 0-40 cb (kPa) range gauge
- Replaceable "Quick-Flo" ceramic tip is extra porous for quicker response to drying soil
- Recommended for very coarse soils or non-soil growing medias and crops managed between 0-30 cb (kPa)



IRROMETERS –

Are available in standard lengths of 6, 12, 18, 24, 36, 48 & 60 inches (15, 30, 45, 60, 90, 120 & 150 cm).

Custom lengths also available.



Model TG

- 0-100 cb (kPa) range gauge
- Fixed ceramic tip is an economical choice
- Recommended for turf applications requiring near horizontal placement

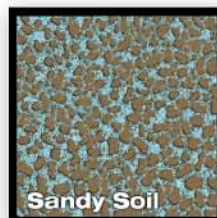


Model MLT

- 0-40 cb (kPa) range gauge
- Body-Tip assembly with "Quick-Flo" ceramic tip can be easily replaced in the field
- Compact size is designed for small containers with very coarse soils or non-soil growing medias and plants managed between 0-30 cb (kPa)

Irrigation Scheduling with the IRROMETER

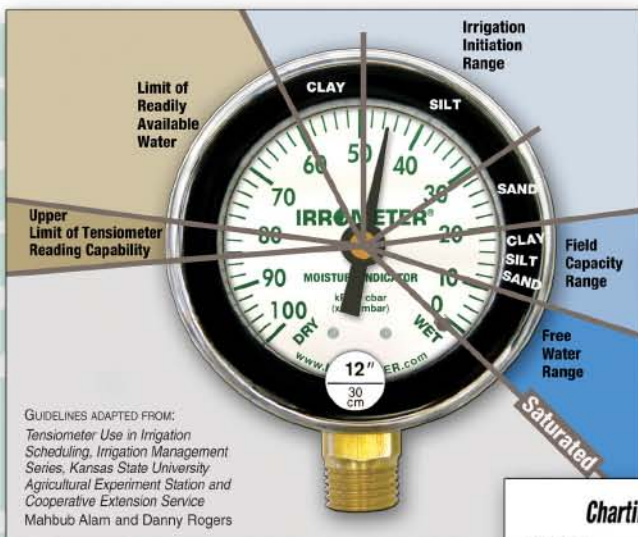
IRROMETER instruments measure soil moisture status in centibars (cb) and kilopascals (kPa) of soil water tension. This value represents the energy a plant's root system uses to draw water from the soil. The key element in proper soil moisture is the operator. Taking the time to interpret your sensor readings will give you a vivid picture of what is happening with the soil moisture in the root system of your crop. Usually 2-3 readings between irrigations are sufficient. Charting your readings will show you exactly how quickly (or slowly) your soil moisture is being depleted. Displaying the readings on a graph makes it easier to see the trends, thereby making interpretation simpler.



Different soils hold water to different tensions.

Perhaps the most important soil moisture reading is the difference between today's reading and that of 3-5 days ago. That is to say, how quickly is the reading going up? A slow increase means the soil is drying out slowly. But a big jump means the soil is losing water very rapidly. A faster rate of increase means the crop is beginning to work harder to extract water from the soil and may start to stress. By analyzing such trends in the readings, you will determine **WHEN** to irrigate.

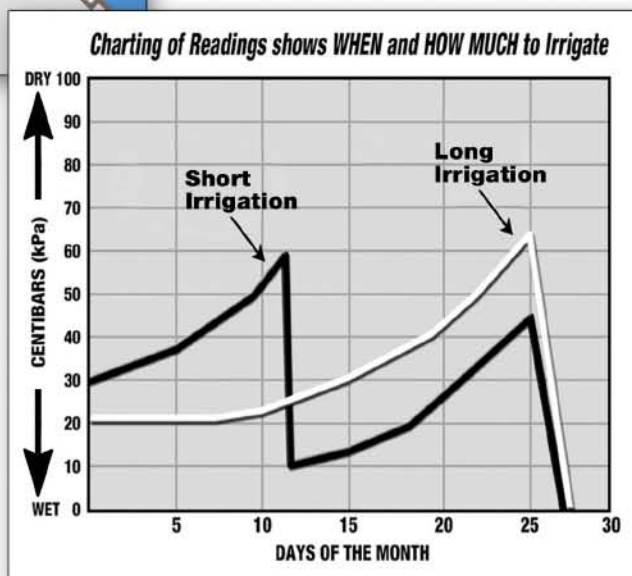
By using sensors at two or more depths in the root system, you can determine **HOW MUCH** water to apply. If the shallow sensor shows a rapidly increasing reading, but the deep sensor shows adequate moisture, you can run a short irrigation cycle as you only need to replenish the shallow roots. If the deep sensor also shows a dry condition, then a longer irrigation is needed to fully re-wet the entire root zone. The readings you take after an irrigation or rainfall event will show you exactly how effective that water application was. Differences in crops, soils and climate make every installation unique. Typically a sensing station every 10 to 20 acres (4-8 hectares) provides adequate data.



Your own experience, combined with a greater understanding of soil moisture trends will soon have you practicing highly efficient "irrigation to need" scheduling.

The illustration above provides a general guideline of how to interpret soil moisture values for various soil types.

This chart illustrates the impact that irrigation run time has on a shallow placed IRROMETER (black line) as well as a deeper placed instrument (white line).





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Service Units

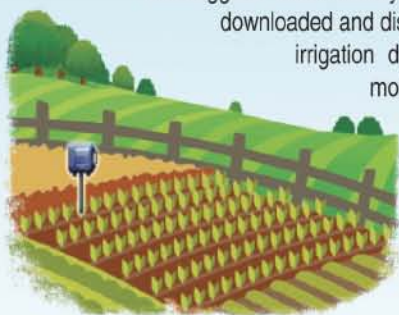
To achieve consistent and accurate readings, entrapped air must be removed from the IRROMETER instrument during initial installation and periodically during use. Our Service Unit kits include a hand vacuum pump used to evacuate air from the instrument. Every operator of an IRROMETER should have at least one Service Unit available (only one is needed for multiple instruments). The Standard Service Unit (#1001) works for most applications, while the optional Test Pump Service Unit (#1002) includes a test gauge on the vacuum pump for validating instrument accuracy. Kits include the appropriate pump as well as a pad of chart forms, small bottle of IRROMETER Fluid, and a copy of the *IRROMETER Moisture Indicator Reference Book*.



#1002

IRROMETER Output Options

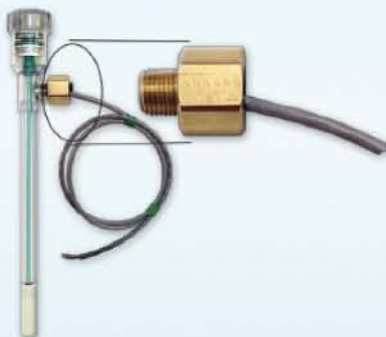
Automatic Data Monitoring Applications



Dataloggers automatically monitor and collect data. This data is downloaded and displayed in graph form on a computer. Critical irrigation decisions can be made easier by viewing moisture readings shown on a graph. The Output Options below convert an IRROMETER reading to an electric signal for use with many dataloggers including the WATERMARK Monitor.

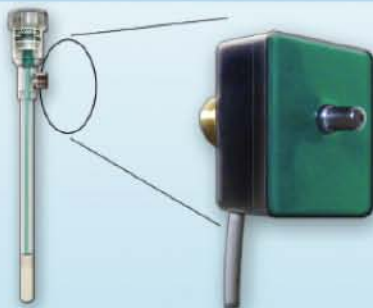
Option "RSU-V" — Voltage Output Remote Sensing Unit

"RSU-V" Series Remote Sensing Units are designed for use on IRROMETERS to indicate soil moisture levels by converting the reading to a 0.5 - 4.5v linear voltage signal.



Option "RSU-C" — Current Output Remote Sensing Unit

"RSU-C" Series Remote Sensing Units are designed for use on IRROMETERS to indicate soil moisture levels by converting the reading to a 4-20 mA loop current signal.



Automatic Switching Applications

The IRROMETER Automatic Gauge is a switch that automates an electrical accessory. Rotating the wedge shaped selector sets the switch to the desired moisture value. Dry conditions will close the switch and wet conditions will open the switch, which could activate an irrigation valve, signal a time clock or warning device.



Option "A" — Automatic Gauge

"A" Series Automatic Gauges are designed for use on the IRROMETER to provide direct switching capabilities and indicate soil moisture levels.

Contact us about
Remote Data Access
via the Internet



IRROMETER®

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