



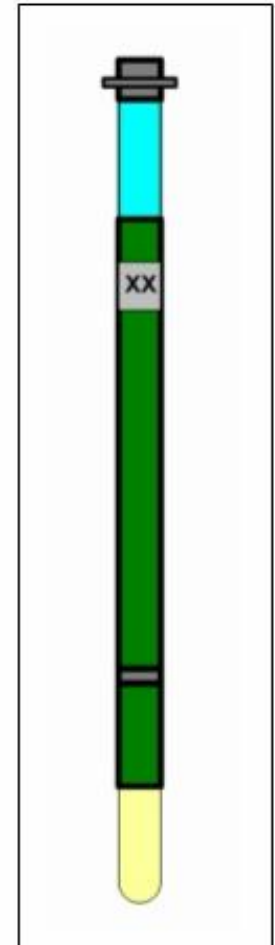
Tensiometer - User Manual

General

The **Tensiometer** is an accessory for measuring the soil water tension, and the value is measured correlative to the amount of water in the soil. This instrument reflects the changes of water amount in the soil, hence the importance for controlling irrigation.

Description

The **Tensiometer** built from three main parts – PVC pipe, porous ceramics and vacuum measurement gauge. The outer side of the ceramic is in tight contact with the ground and the inner side with water in the pipe. The water flows through the ceramics from wet zone to the dry zone (from the pipe into the soil) when soil is not in Saturation (wet) and from the soil into the tensiometer back after irrigation. This flow produces vacuum in the pipe that can be measured by mechanical, mercury or electronic gauge. The measurement units are in centibar or milibar.





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Preparation and Installation

Insert the empty tensiometer(s) without gauges into the deep pot of water (preferred deep is the tensiometers height) for 24 hours. The tensiometer (s) will fill itself through the ceramics with water without dissolved oxygen. It can take more than 24 hours to feel whole tensiometer. You can accomplish this stage by filling cooled boiled water into the remaining space. Carefully install the gauge and screw it with a necessary force in order to make tight and close vacuum system.

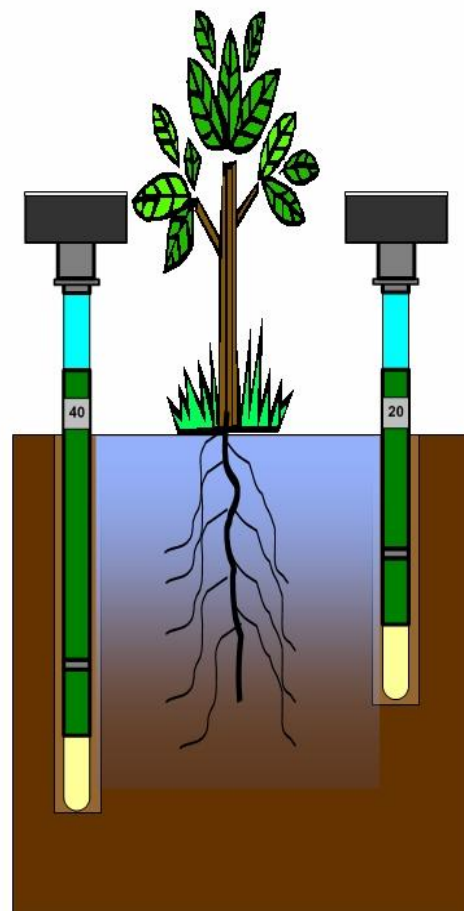
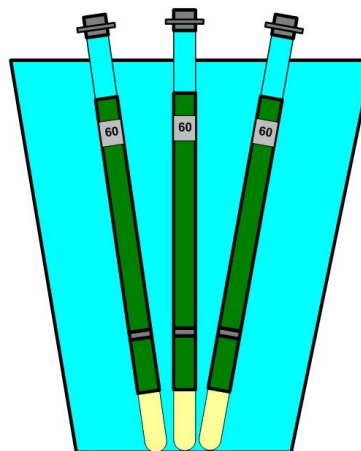
Testing the Tensiometer

After gauge installation, dry with soft paper the ceramic tip and wait about 10 minutes. The tensiometer will show its initial reading, equal the pipe length (in cm.) divided by 10. This reading called **Tensiometer "0"**. Remember this reading or make a little mark on this reading. Always subtract this value from the gauge reading in order to get the correct reading.

If the system is closed well, the ceramics will remain dry or slightly wet (no water drops) and the reading will increasing when you dry the tip with soft paper (you will see this on gauge). In case of no reading rising or big water drops on the ceramic tip – sign of tensiometer malfunctioning (maybe the gauge is not closed tightly). In case of reading rising and dry ceramics – the tensiometer is OK.

Installation

Drill 5-7 cm diameter hole of the desired deep in the soil. Put a little quantity of water and soil into the hole. Carefully insert the tensiometer, add soil around and water in order to make good contact between tensiometer and the soil. The preferred installation must be at two heights (20/40 cm, 30/60 cm etc.) in the root zone of the plant. In general, the tensiometer placement must be in the plant root zone in order to reflect the water tension changes as correct as possible. For sand soils it can be installed 5 cm near the dripper. For heavy soils it can be installed even 15 cm far from the plant.





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Tensiometer Readings

The reading will be done according to the plant and soil types.

It is very important, to read the tensiometers before irrigation cycle.

In general, the tensiometer is the closed vacuum system. In ideal conditions, it means that the water amount left the tensiometer when the soil is dry will return into tensiometer when irrigation cycle initiated. But due to the outside heat, the air bubble will push additional water amount outside the tensiometer, regardless of soil suction. So, please check the tensiometer after irrigation cycle and if you saw the **air bubble greater the 1 cm. and reading is Tensiometer "0"**, open the gauge and add water into the tensiometer. This operation must be done carefully in order to not move the tensiometer from its position.

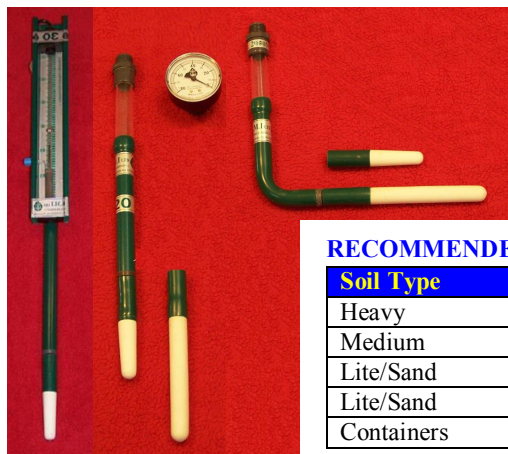
Irrigation levels according tensiometer(s)

Please make consultations with agronomic instructor about irrigation levels for each growth stage, plant and soil types.

Protection

Make appropriate protection of tensiometer(s) in order to avoid damages due to animals, unauthorized people and agriculture machinery.

Tensiometers – Model 2XXX



Mechanical Gauge Tensiometers	Model 2080, 2100, 2250
Mercury Gauge Tensiometers	Model 2001 (55 cb)
Standard Length	20,30,45,60,90 cm
Standard Ceramics	60 mm length (replacable)
Sensitive Ceramics	120 mm length (replacable)
Gauges	80 cb, 100 mb, 250 mb

RECOMMENDED USAGE

<u>Soil Type</u>	<u>Gauge (mb)</u>	<u>Tensiometer</u>	<u>Tube Shape</u>	<u>Ceramics</u>
Heavy	800	2080	Straight	60 mm
Medium	800 / 250	2080/2250	Straight / Angle	60/120 mm
Lite/Sand	550	2001	Straight / Angle	60/120 mm
Lite/Sand	250/100	2250/2100	Straight / Angle	60/120 mm
Containers	250/100	2250/2100	Straight / Angle	60/120 mm



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REDUCES WATER CONSUMPTION
REDUCES FERTILISERS CONSUMPTION
RISES THE HARVEST
AND SAVES ECOLOGY

DIGITAL TENSIO METER

0-100 mb, 0-200 mb, 0-50 cb, 0-80 cb, 0-100 cb, 0-200 cb
IP-65, 3 Years warranty