

# Water for Profit

## TENSIOMETERS IN IRRIGATION



**A tensiometer is a closed water filled tube with a ceramic tip at one end and a vacuum gauge at the other.**

### Introduction

The ceramic tip on the tensiometer acts like a plant root in that it can let water in and out. As the soil dries, water is drawn out of the ceramic tip, which creates a vacuum in the tube. The vacuum pressure is read by a pressure gauge. After irrigation or rain, water moves back into the tube, which decreases the vacuum.

By acting like a plant root, the tensiometer gives you an indication of how hard it is for the plants to take up water. The drier the soil, the higher the reading, and the harder it is for the plant to take up water. When the plant has trouble taking up water it uses precious energy on trying to get water rather than on growth.

*High vacuum*

*(high gauge reading)*

*= soil is dry*

*Low vacuum*

*(low gauge reading)*

*= soil is moist*



### Operation

- You should always install tensiometers in a set of two. The shallow tensiometer should be installed at about the middle of the active crop rooting depth. This tensiometer is used as the primary indicator of crop stress and hence, when to turn the irrigation on. The second tensiometer should be installed near the bottom of the active rooting depth. This tensiometer is used to indicate when the water has reached the bottom of the root zone and hence, gives an indication of when to turn the water off.

### Maintenance

- Regularly push the button on the water reservoir to inject water into the tube and remove air. It is particularly important to do this after installation. If the soil is dry you will need to regularly inject water.
- Use boiled rainwater/demineralised water to prevent the build-up of algae.
- For best results, push the button down after taking each reading.

For more details contact the Growcom members access line on 07 3620 3844.

Reading (kPa)	Soil Condition	Irrigate?	Notes
0-8	Saturation	No	Soil is wet. No water uptake
8-10	Field capacity	No	Best conditions for soil moisture and aeration
15-25	Drying out	Maybe	Yes, if critical stage of crop growth
25-50	Drying out	Yes	Unless trying to stress plants
50-80	Dry to very dry	Yes	Unless trying to stress plants
>80	Very very dry	Yes	Tensiometer has stopped working

*Disclaimer: This information is provided as a reference tool only. Seek professional advice for irrigation specifics.*

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