

# Wandin Silvan Field Day Weather Station

<http://www.agua.com.au/DPIYV/>

## Weather Stations as a Farm Tool

This weather station can be used in the following ways:

- Evapotranspiration (ET) data helps determine a crop's water needs
- Frost and heat alerts
- Pest and disease management.
- Chemical effectiveness.

# Weather Stations



The station provides farmers with information to help them better plan their irrigation scheduling.

The information from the weather station is used to calculate the local Evapotranspiration figure (ET<sub>o</sub>).

The ET<sub>o</sub> is the water lost from plants and soil over a day. It changes from day to day depending on the weather.

Irrigators can use ET<sub>o</sub> to work out how much water is left in the soil and then decide how much water they need to apply to their crops.

Frost and heat alerts are a common use of weather stations, allowing farmer to implement mitigation plans, for example, sprinkler irrigation to reduce crop damage.

Pest and disease pressures are often closely linked to weather. Humidity and temperature ranges can favour the explosion of pest populations. It is possible to predict these pest pressures, and adjust control measures accordingly.

Many farm chemicals, such as herbicides, pesticides and fungicides, have optimum temperature ranges for maximum effectiveness. Wind conditions also have major impact on achieving required application rates for controls.



Department of  
Environment and  
Primary Industries



### Useful Links:

<http://www.dpi.vic.gov.au/agriculture/farming-management/weather-climate/understanding-weather-and-climate>

<http://www.fao.org/docrep/x0490e/x0490e00.HTM>

<http://www.bom.gov.au/climate/data/index.shtml?bookmark=201>

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## Understanding Evapotranspiration for Irrigation

- Evapotranspiration (ET) data will help you meet crop water demand
- ET data helps determine a crop's water use

# Evapotranspiration (ET)

Evapotranspiration (ET) is the process of water moving to the atmosphere through plant use (transpiration) and evaporation from the earth's surface.

ET can be used by irrigators to determine how much water is lost in a paddock and therefore needs to be replaced through irrigation.

The local Evapotranspiration figure (ET) is calculated from information gathered by the Wandin Silvan Field Day's weather station. Farmers, close to the weather station, can use the information from the weather

station with confidence.

Crop water use is calculated using the following formula.

$$ET_c = K_c \times ET_o$$

Crop water use (ET<sub>c</sub>)

Crop coefficient (K<sub>c</sub>)

Evapotranspiration (ET<sub>o</sub>)

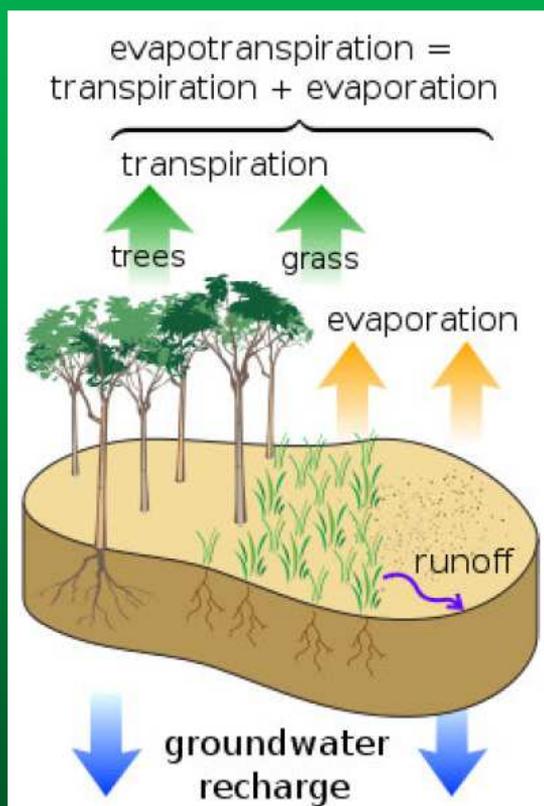
The crop coefficient is available for your particular crop, growth development stage, and planting density (see useful links). For example, the international standard (FAO 56) approach for strawberries at mid growth stage is a K<sub>c</sub> of 0.80.

If a strawberry crop has not been irrigated for 3 days, the values for ET<sub>o</sub> are as follows:

Day	ET <sub>o</sub>		K <sub>c</sub>		ET <sub>c</sub>
1	8	x	0.80	=	6.4
2	10	x	0.80	=	8.0
3	7	x	0.80	=	5.6
TOTAL					20.0

For the farmer to replace this lost water, they will need to apply (through irrigation) an equivalent of 20 mm of rain.

Different soils store different amounts of water. Rather than exceeding the amount of water the soil can hold, it would be better to irrigate more often.



Evapotranspiration Diagram (Source: Wikipedia)

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