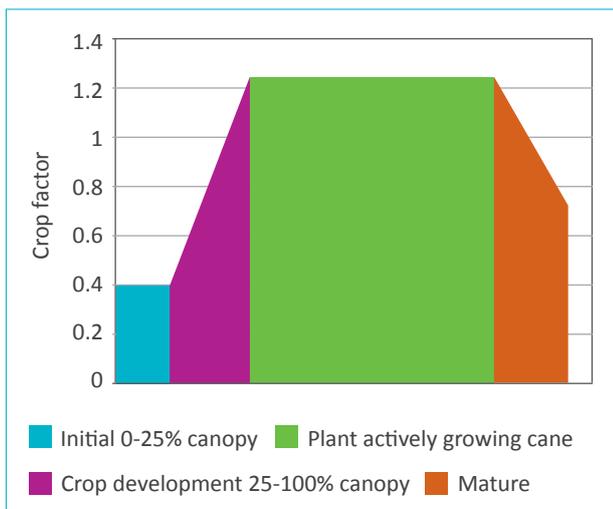


# Crop water use

Crop water use varies greatly throughout a season depending on the time of year and the crop growth stage. Understanding the variation in crop water use is important for adjusting irrigation schedules and the volume of water being applied.

Crop water use can be calculated in two ways, either by using WaterSense or by a manual calculation.

For a manual calculation, two pieces of information are required: the crop factor ( $K_c$ ) and local reference evapotranspiration ( $ET_0$ ). The crop factor is combined with regional  $ET_0$  to estimate crop water use at different growth stages. Note: These crop factors are for use with  $ET_0$ , not Class A Pan evaporation. Regional  $ET_0$  can be obtained from the Australian Bureau of meteorology at the following website – <http://reg.bom.gov.au/watl/eto/>.



## Calculating crop water use using $ET_0$ and crop factors

**Table 1:** Example reference evapotranspiration.

Day	1	2	3	4	5	6	7
$ET_0$	5.2	4.9	3.6	5.0	5.0	4.5	4.6

### Example 1

Crop cover: 10%

Crop stage: initial (see graph)

Crop water use on Day 1 =  $ET_0$  (from Table 1) x crop factor  
 = 5.2 mm x 0.4  
 = 2.1 mm

### Example 2

Crop cover: 100%

Crop stage: plant actively growing cane

Crop water use on Day 4 =  $ET_0$  x crop factor  
 = 5 mm x 1.25  
 = 6.3 mm

**Table 2:** Crop water use ( $ET_c$ ) for crops with 10% and 100% cover.

Day	1	2	3	4	5	6	7	Total crop water use for week
Daily $ET_0$	5.2	4.9	3.6	5.0	5.0	4.5	4.6	
$ET_c$ 10% cover ( $K_c$ 0.4)	2.1	2.0	1.4	2.0	2.0	1.8	1.8	13
$ET_c$ 100% cover ( $K_c$ 1.25)	6.5	6.1	4.5	6.3	6.3	5.6	5.8	41

## Using crop water use for irrigation scheduling

In situations where it is possible to accurately regulate the amount of water applied, for example overhead or drip irrigation, the crop water use can be used to determine how much water to apply to refill the profile. For the example above if the crop was at full canopy you would need to apply 40 mm to replace the water the crop has used. If the water holding capacity of the soil is known, the crop water use can be used to estimate when the next irrigation will be. For example: if we have a crop at 100% canopy on a soil with a water holding capacity of 80 mm, and the soil profile is full; then the crop will need watering in about two weeks (Table 2, crop is using 41 mm per week), providing the weather conditions are similar. A soil that only holds 40 mm of water will need watering after a week.