



Irrigation Scheduling

i. What is scheduling (M01-1001)

Irrigation scheduling is the process of making decisions about when to irrigate and how much water to apply. In other words, it is applying **the right amount of water, in the right place, at the right time**. The three most important questions that must be answered in order to schedule effectively are:

i. What is the soil's Readily Available Water Content?

Readily Available Water Content is the amount of water stored in the soil between Full Point and Refill Point. The Refill Point is the soil water content at which plants will start to show signs of stress. The Full Point is the soil water content at which the maximum amount of water is being held by the soil against gravity, after excess water has drained away. Irrigation should aim to replace the volume of water between the Refill Point and the Full Point.

Some Readily Available Water Contents for a range of soils is shown below:

Soil Type	Readily Available Water (mm)
Cracking clay	90 - 100
Clay loam	80 - 90
Loam	70 - 80
Sandy loam	50 - 60
Loamy sand	30 - 40
Sodic clay	40 - 90

ii. How much water is in the soil at a given time?

Soil moisture monitoring tools can be used to determine the amount of water present in the soil at

any one time. These devices can range from something as easy to install and read as tensiometers to the more sophisticated EnviroSCANS and neutron probes (see Fact Sheet M02-0901).

Each of these tools varies widely in price, which generally reflects the accuracy of the system.

iii. How fast is the crop using the available soil water?

The rate at which water is being used by the crop can be estimated from evaporation data and a suitable crop factor (see Fact Sheet M03-1001).

By relating daily evaporation to the percent of ground covered by cane leaves, an estimation of daily plant water use can be achieved. Crop factors for relative canopy covers are shown below.

Canopy Cover	Crop Factor
Bare ground	0.3
1/4 canopy	0.4
1/2 canopy	0.6
3/4 canopy	0.7
Full canopy	0.85
Maturing crop	0.65

Daily evaporation rates can be measured on-farm through the use of a BSES Blue Drum or gathered from your local BSES or CPPB.

So why bother scheduling irrigations?

By knowing how much moisture is in the soil and how quickly the crop is using it, irrigation times can be planned in advance. This will mean that crop stress and therefore yield reductions, will be minimised.

For more information, please ring your local Rural Water Use Efficiency Officer.
The Rural Water Use Efficiency Initiative is a joint venture between BSES, CANEGROWERS and the Queensland Government through the Department of Natural Resources and Mines.

