Cabbage

Water Use Study
Carabooda, Western Australia

This project is supported by Perth Region NRM, through funding from the Australian Government's Caring for our Country.

Irrigation System: Fixed Overhead Butterfly Sprinklers

Application Rate: 11.7 mm/hour

The Cabbage seedlings were planted on the 12th January 2009 and reached maturity after 72 days.

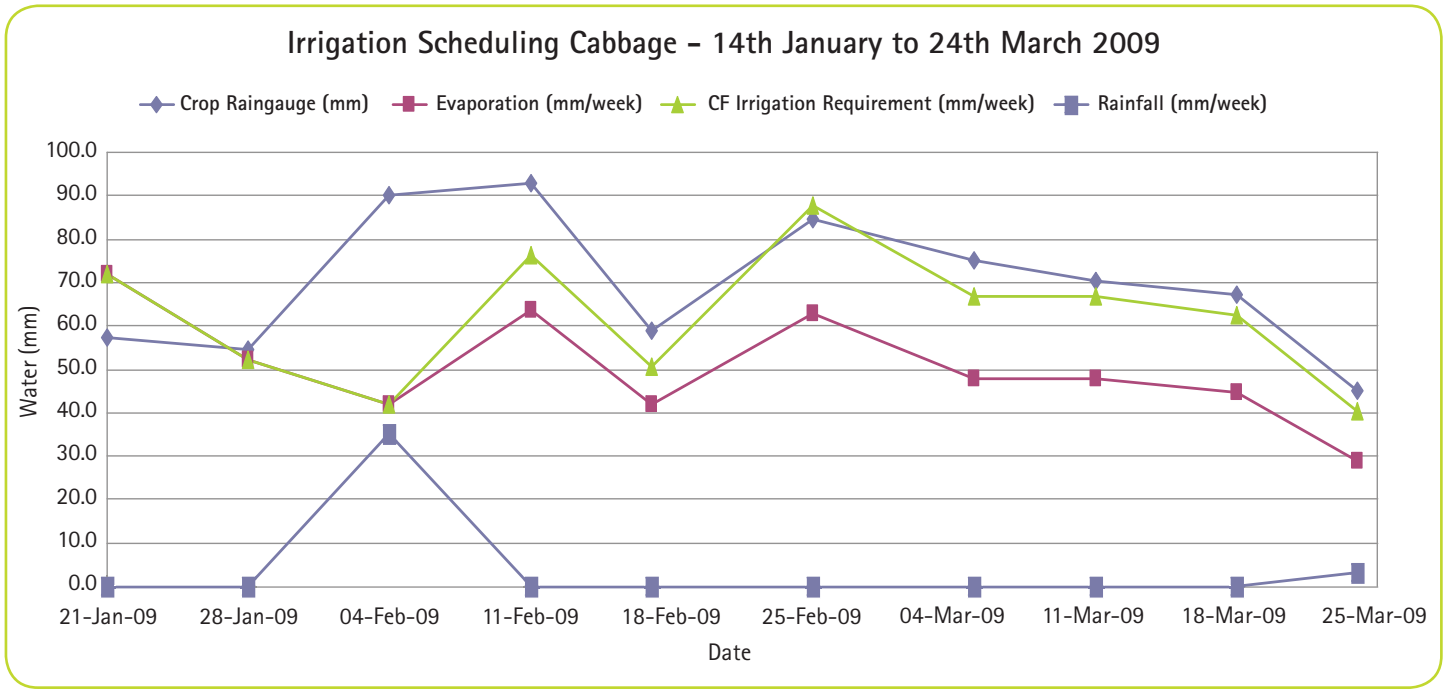
Local evaporation, recorded from Wanneroo weather station (http://www.agric.wa.gov.au/PC_93316.html) averaged 8mm/day for the month of January, with a max of 12mm and a min of 2.8mm. During January, irrigations were scheduled to replace 100% of evaporative losses or a crop factor of 1.0. Daily irrigation was broken up into 3-4 shifts per day at 3mm of irrigation per shift. This schedule continued through to the 31st January when 35mm of rain fell in one day. The 35mm of rain saturated and leached through the soil profile past 600mm. From this rainfall event, the maximum water holding capacity was set for the soil moisture monitoring equipment and this level was used as a guide for scheduling future irrigations.

The crop water requirement increased to a 1.2 crop factor in February. This was approx. 1 hour or 11.7mm/day. During the first week, actual infield application was 13.3mm/day and irrigations were moving through to 600mm.

This increase in irrigation coincided with 4 consecutive days of greater than 10mm of evaporation and temperatures of 32-37°C. From the 11th to 25th of February, irrigation run times matched crop water demand and wetting fronts were kept in the rootzone. Soil moisture at 400mm to 600mm remained steady and deep drainage water loss was assumed to be minimal.

By the 5th of March (51 days old), the cabbage crop had grown to full cover and irrigations were scheduled to replace 140% of evaporation (1.4 crop factor). Local evaporation was averaging 7.3mm/day and temperatures averaged 28°C. The irrigation controller was set to deliver 11mm/day which was broken up over 3 shifts. Soil moisture trends below the active rootzone (600mm) showed a slight increase at approx. 1pm each day. This is possibly due to the saturation and accumulation of soil water from the morning irrigation shifts and crop water demand not being as high as expected.

From the 11th March through to harvest on the 24th March, the cabbage crop required 102mm of water and 112mm was applied through irrigation. Daily evaporation ranged from 3.4mm to 8.8mm/day during the life of the crop and changes to the irrigation schedule were made weekly.



Water Use Results

Rain: 38 mm

Crop Water Demand: 616.8 mm

Irrigation Applied: 658 mm (equal to 6580 kL/ha)

Total Water Applied: 696 mm

Perth Region NRM Inc.
80 Great Northern Highway (Corner Bishop Road)
MIDDLE SWAN WA 6056
Tel: (08) 9374 3333 Fax: (08) 9374 0685
Email: enquiries@perthregionnrm.com
www.perthregionnrm.com