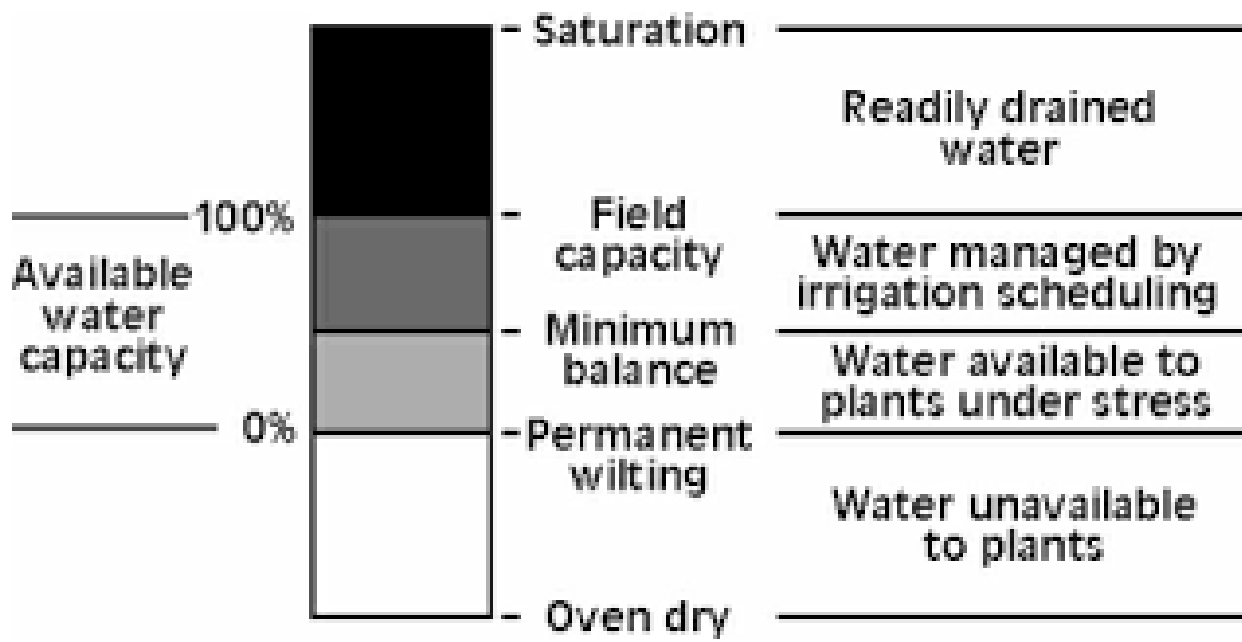


Rainfall and supplementary irrigation



Smart Controller Water Savings

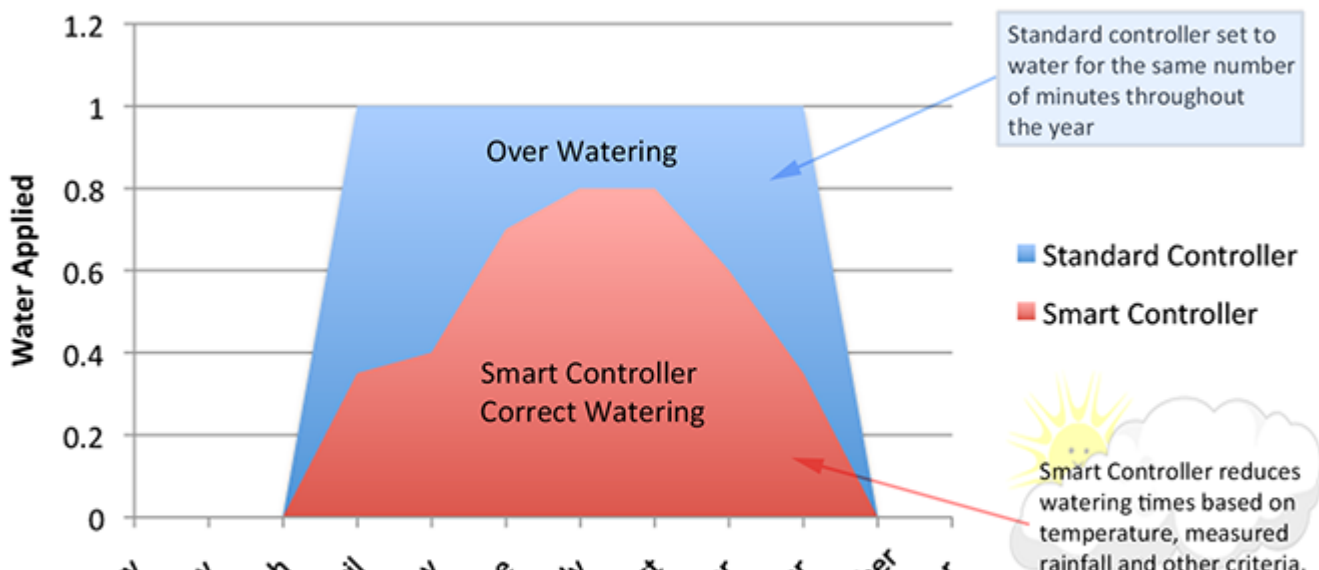


Table 1. Determining When and How Much to Irrigate

Calculating When to Irrigate

Plant-available water
 $PAW = \text{field capacity} - \text{wilting point}$
 = 0.20 in./in. - 0.08 in./in.
 = 0.12 in./in.

50 percent depletion of PAW
 = 0.12 in./in. x 0.50
 = 0.06 in./in.

Water content at 50 percent depletion
 $\text{water content (field capacity)} - \text{allowable depletion}$
 = 0.20 in./in. - 0.06 in./in.
 = 0.14 in./in.

Calculating How Much to Irrigate

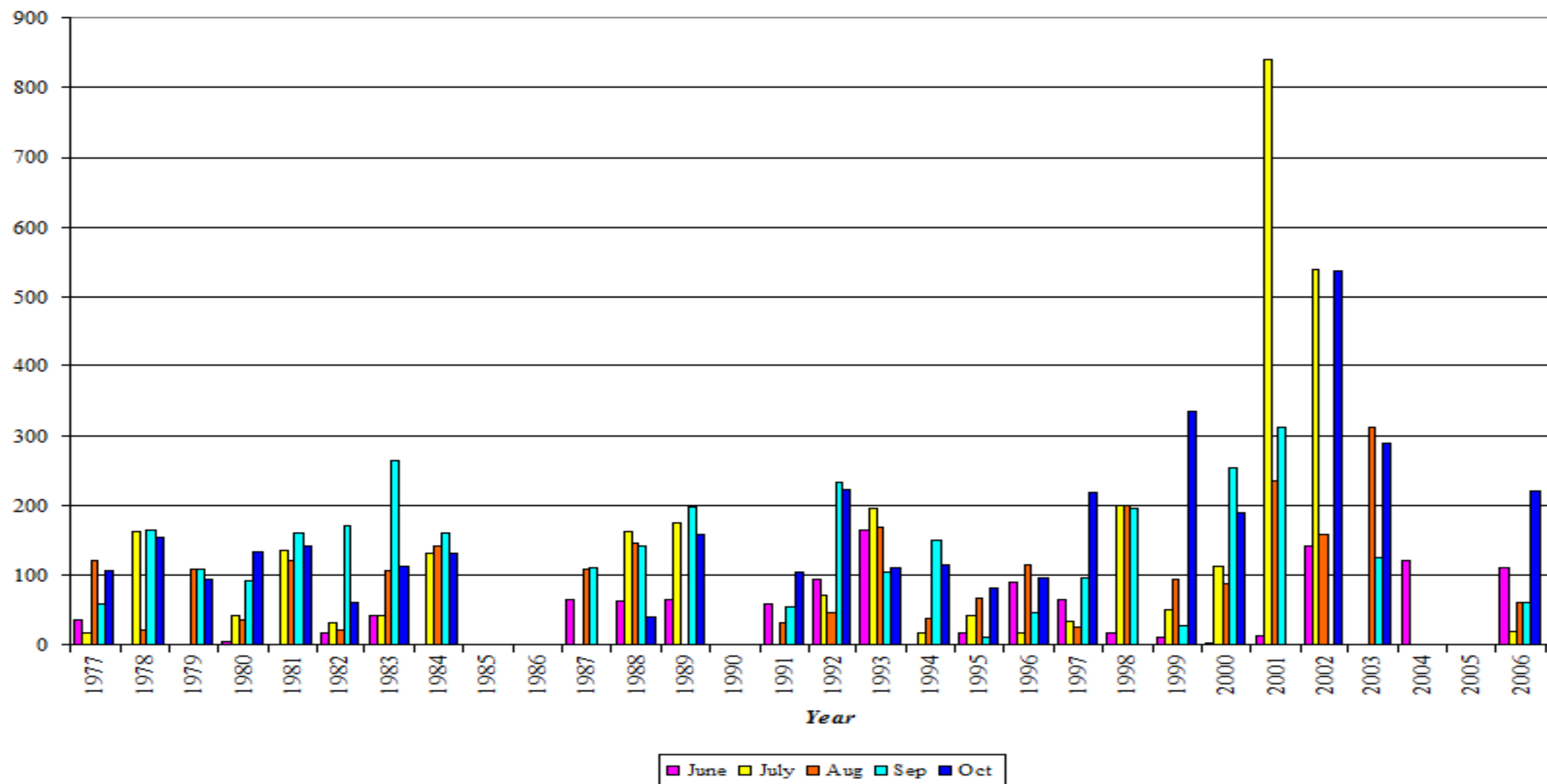
Net irrigation amount (knee-high stage)
 = depletion volume times effective root depth
 = 0.06 in./in. x 8 in.
 = 0.48 in./irrigation

Gross water application
 = net amount divided by irrigation efficiency
 = 0.48 in./0.75
 = 0.64 in./irrigation

Net irrigation amount (tasseling stage)
 = 0.06 in./in. x 12 in.
 = 0.72 in./irrigation



Monthly rainfall at Illupur station



2000																				
Week	Jun 1-7	Jun 8-14	Jun 15-21	Jun 22-30	Jul 1-7	Jul 8-14	Jul 15-21	Jul 22-31	Aug 1-7	Aug 8-14	Aug 15-21	Aug 22-31	Sep 1-7	Sep 8-14	Sep 15-21	Sep 22-30	Oct 1-7	Oct 8-15	Oct 15-21	Oct 22-31
Manapparai																				
Thirupattur	2.4	0	0	4.2	0	0	2.4	3.2	53	2.4	2.2	2.2	4.4	6.4	3.6	103	72.4	11.8	3.2	42
2001																				
Manapparai	6	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thirupattur	82	0	28	8	2.4	2.2	6.4	112	3.8	0	7.3	2.3	0	24.3	0	56.1	13.8	29.3	41.7	46.4
2002																				
Manapparai	0	39	0	0	0	0	0	4	10	0	0	84	0	15.2	57	29	39	83	122	56
Thirupattur	25.2	15	0	0	31	0	0	12	0	0	0	27	0	0	2	0	10	2.1	82.5	45.7
2003																				
Manapparai	31	3	2	0	0	0	0	0	0	72	15	4	18	0	37	81	58.2	15	115	22
Thirupattur	0	8.4	0	16	5.2	33	0	3.2	3.2	43.1	0	20.1	31.2	0	34.2	54	3.2	40.1	54	30.4
2004																				
Manapparai	82	14	6	0	0	0	0	0	0	0	0	0	23	44	98	47	11	27	31	89
Thirupattur	24	23.3	0	0	10.5	5.2	60.1	0	0	19	52.5	2	140.5	0	76.4	99.4	49.6	122.6	82.1	159.2
2005																				
Manapparai	2	10	0	0	0	0	13	0	0	0	0	29.2	24	20.2	0	54	5.6	73.2	38.8	51.7
Thirupattur	0	0	0	0	9	18.4	281.8	0	0	149.4	0	0	118.6	0	0	0	3.6	187.6	14.4	76.2
2006																				
Manapparai	0	0	10	0	0	0	0	0	0	2.6	46	7	29.5	20	0	27	21.4	25.4	67.8	98.2
Thirupattur	12.6	0	60	12.4	0	0	35.4	4.6	13.8	2.2	0	19.8	45.2	0	0	83	64.5	63	21	120.8
2007																				
Manapparai																				
Thirupattur	0	0	0	0	12.2	23.4	49.4	32.4	73.4	0	12.6	171.4	12.2	26.2	24.4	30.8	0	42.2	50.4	88.6
Rainfall (mm)	0-25				26-50			51-100			101-150				151-200			>200		

Irrigation scheduling

Weather based on the amount of water lost by plant ET and the amount of effective rainfall and irrigated water entering into the plant root zone

Soil-moisture based – measure soil moisture levels in the plant root zone and apply water if there is water shortage for plants.

Plant based – directly detect plant responses to water stress and initiate irrigation as plants indicate suffering from water stress

Timely accurate determination of water and weather conditions (field based) are essential for irrigation scheduling

Rain gauge; Radiation (Pyranometer solar radiation in flux density (watts/metre square)); **Temperature** (contact type & non contact type i.e. thermometer) & Humidity gauge; **Wind speed** & direction. **Data logger** attached with solar panel for power and software

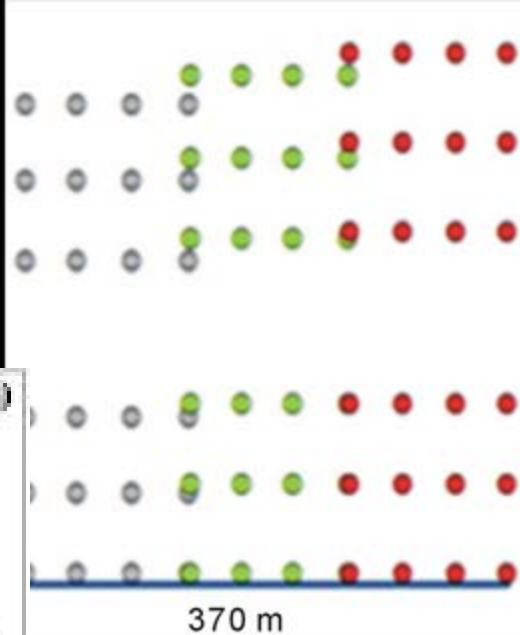
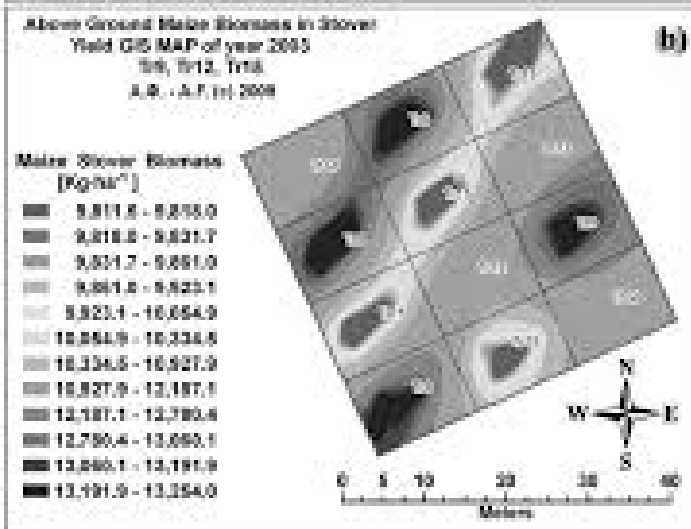
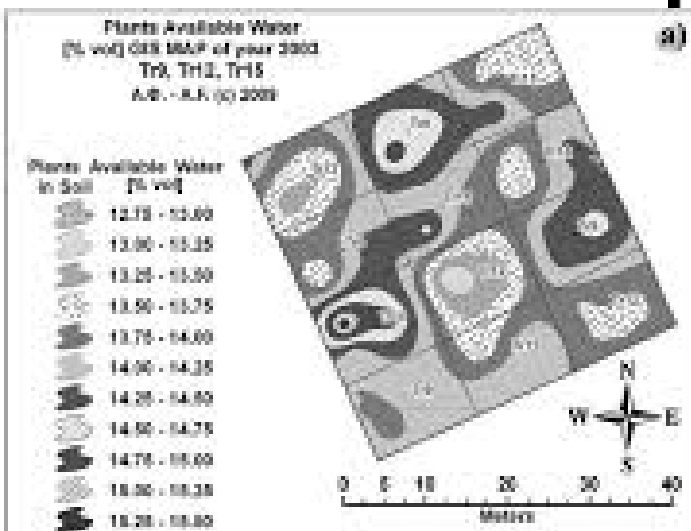
Rain sensors are designed to stop irrigation in response to a specific amount of rainfall, such as 1/8 to 1 inch. When the sensors dry out (in a day or two), they turn the power to the valves back on.

Soil moisture sensors measure the level of moisture in the soil . It allows you to set the moisture level at which you want to stop and start irrigation.

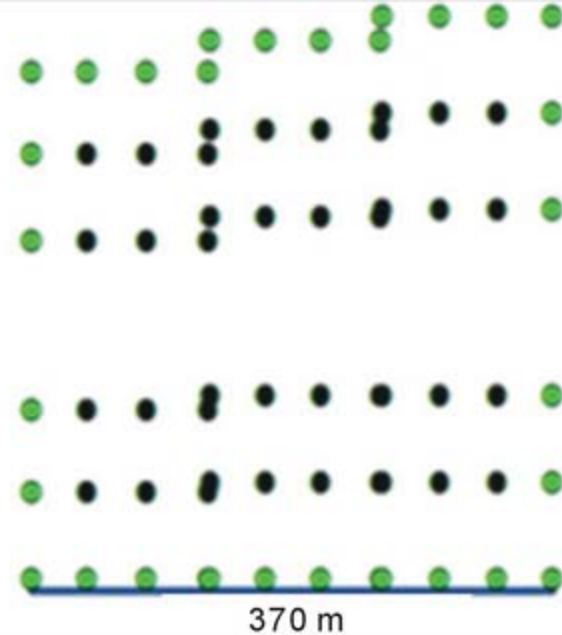
Wind sensors turn off irrigation valves when the wind reaches a pre-set speed, commonly used with automatic sprinkler systems to reduce evaporation and prevent the wind from blowing the spray away from the targeted areas.

Irrigation Sub-Meters - quantify the amount of water used for landscaping and therefore not returned to the sewer.

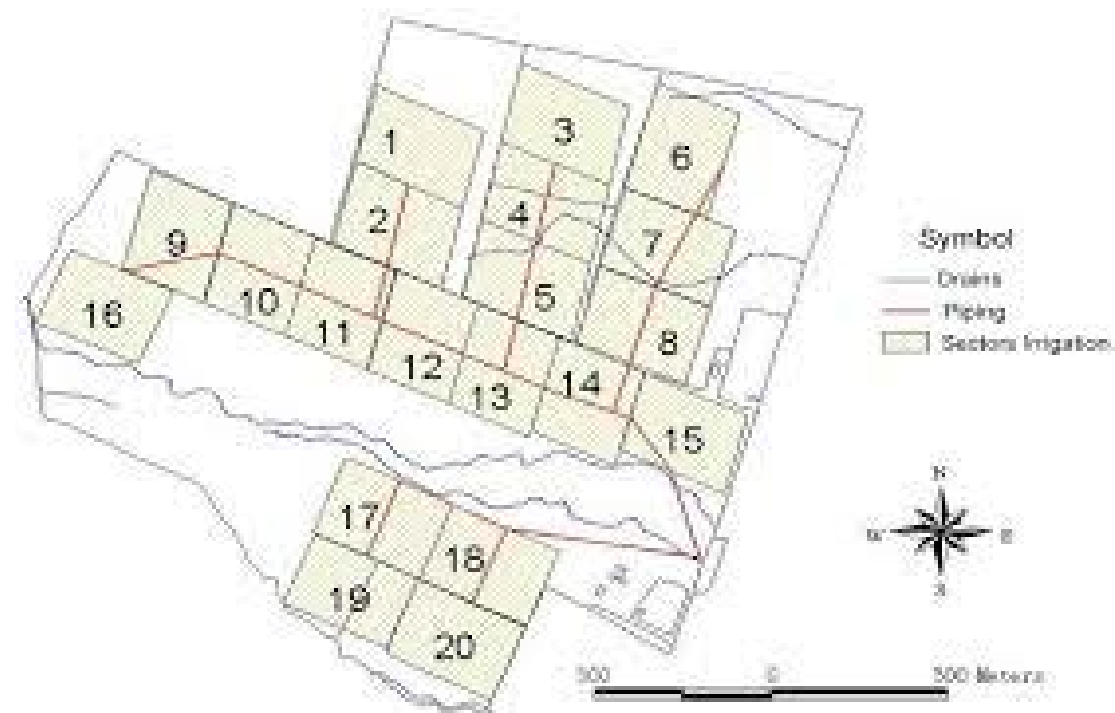
Drip irrigation is a system of valves, tubing and emitters that allows water to drip slowly at the root zone of each plant.



Legend
Discharge points
● Irrigation zone 1
● Irrigation zone 2
● Irrigation zone 3
— Manifold



Legend
● Yield points
● Discharge points
— Manifold





Thank you