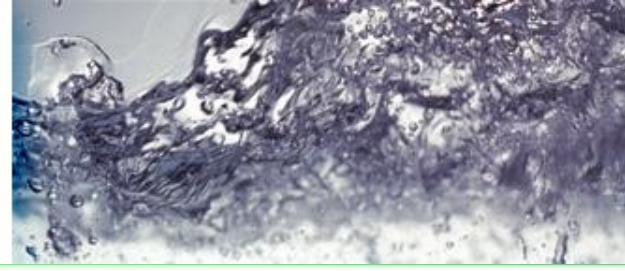


What is Capiphon?



Revolutionary Drainage Technology

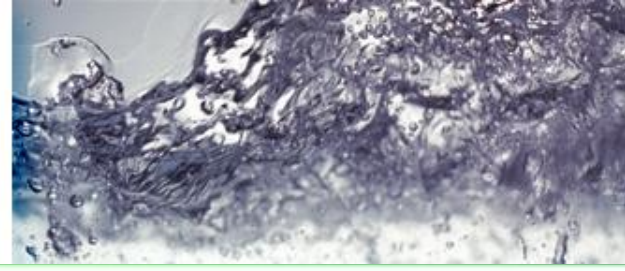


**Best Invention
of the Year 1999**

**International Exhibition
on Ideas, Inventions
and Novelties
Nuremberg**



What is Capiphon?

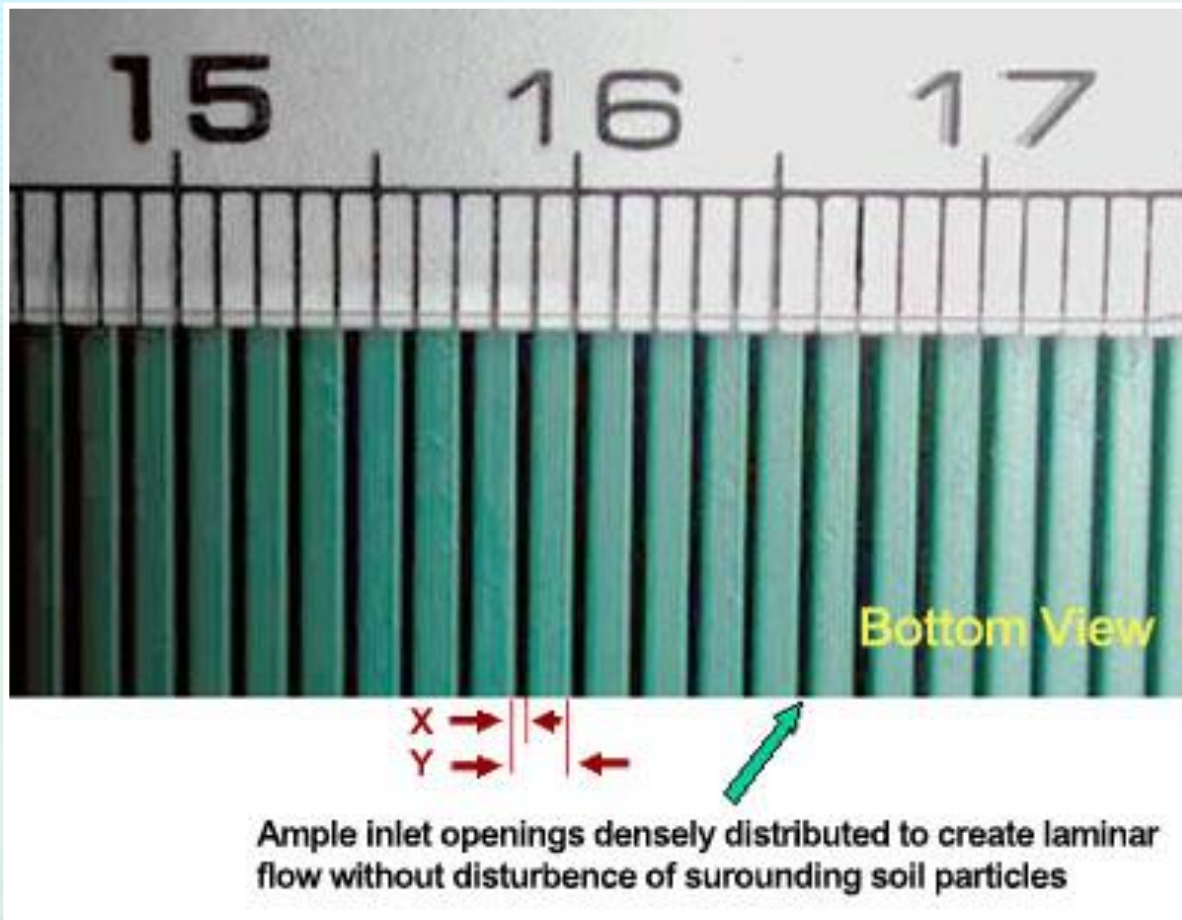
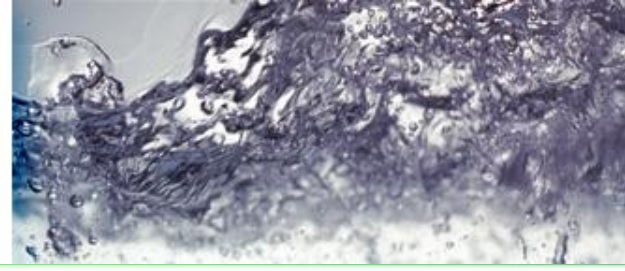


- 20 cm wide belt of soft durable plastic
- 2 mm thick
- Ω (Greek Omega) shaped grooves on under-side
- 0.3 mm opening, 1 mm internal pore

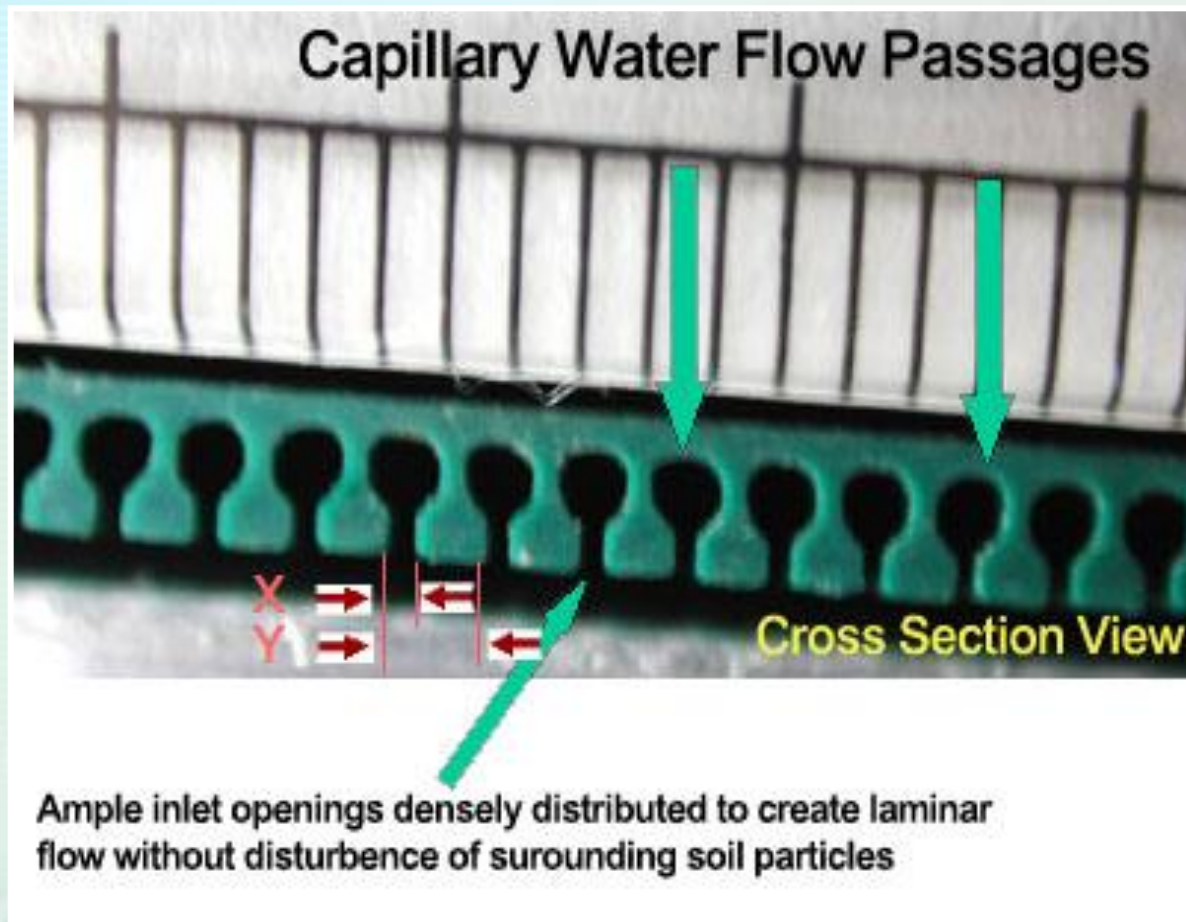
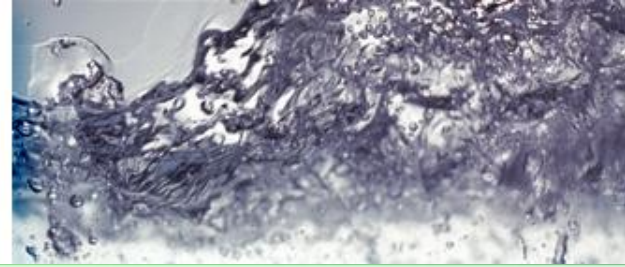
DRAINAGE WATER STORAGE
SAVE URBAN NATURAL
BREAKTHROUGH



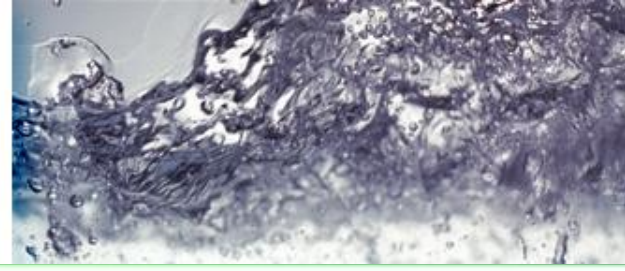
What is Capiphon?



What is Capiphon?



What's in a Name?

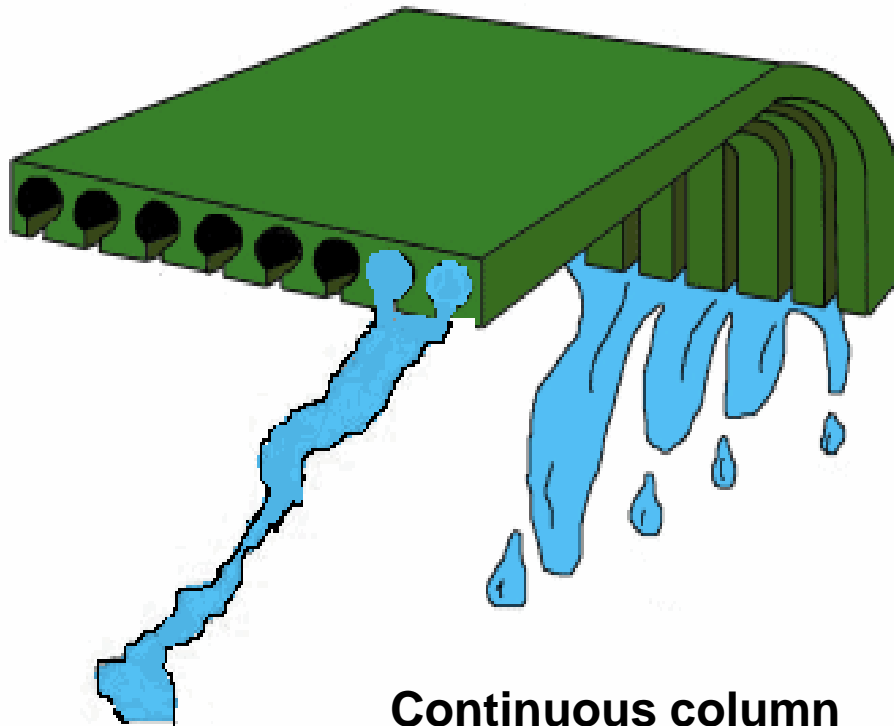
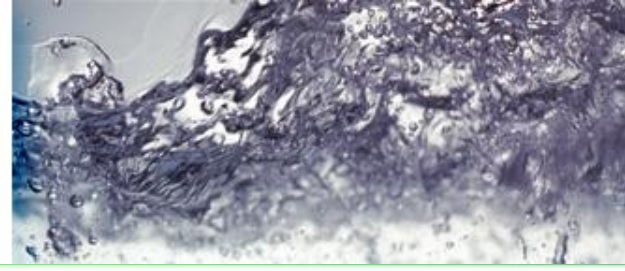


- Capiphon = **cap**illary + **si**phon
 - Capillarity
 - Siphon
 - Surface Tension
 - Gravity

DRAINAGE WATER STORAGE
SAVE URBAN NATURAL
BREAKTHROUGH



How does it work?



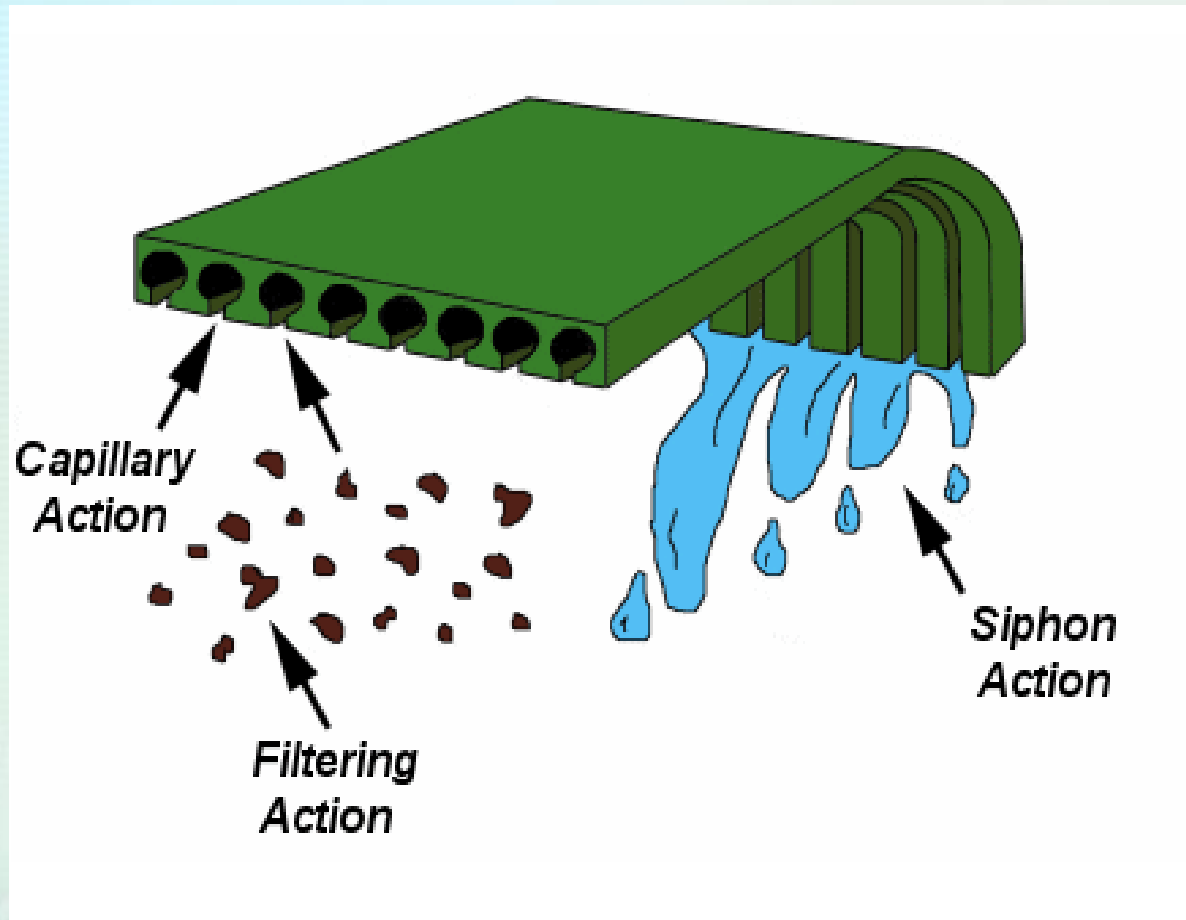
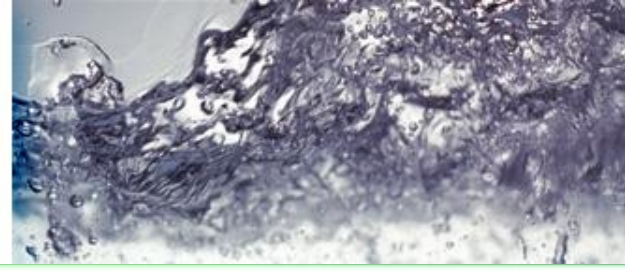
**Continuous column
of water in soil**



DRA
SAVE
BREAKTHROUGH

AGE
NATURAL

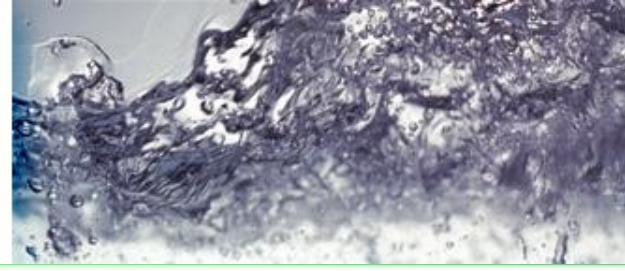
How does it work?



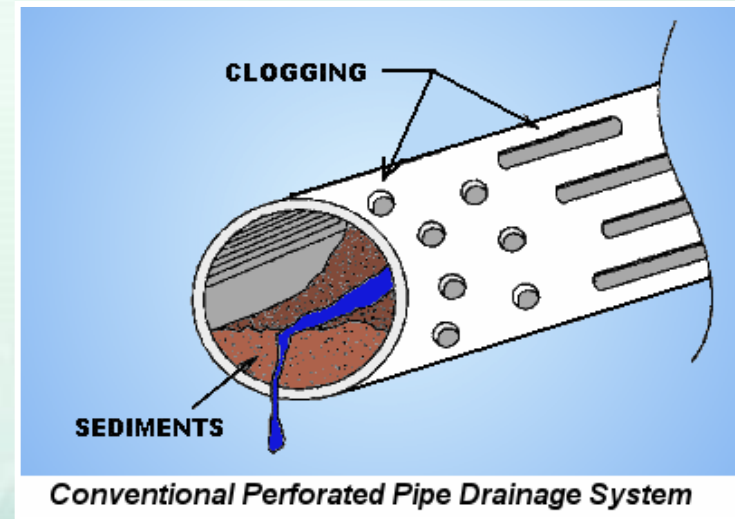
DRA
SAVE
BREAKTHROUGH

NATURAL

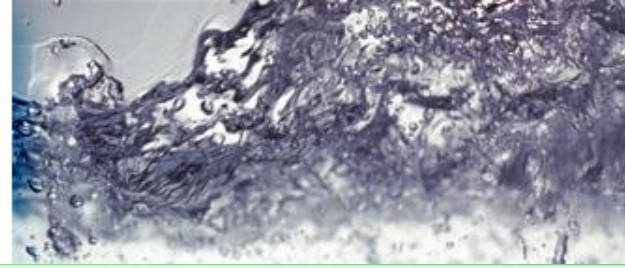
What makes Capiphon better?



- Blockage Free
 - Gravity pulls larger particles down away from the openings
 - Smaller particles fall through the aperture or are flushed out
- Conventional systems flow rate decreases over time



What makes Capiphon better?



- Capiphon performs better
 - Commences flow sooner
 - Flows longer
 - Greater volume drained
- Drain Coil ceases to flow at 20 mm head
- Capiphon continues to flow to at least -45 mm

DRAINAGE WATER STORAGE
SAVE URBAN
BREAKTHROUGH NATURAL



Capiphon Irrigation?

- Preliminary studies showed that
 - Capiphon can run in reverse when installed sub surface
 - Horizontal & vertical movement
 - Low head

Water moves laterally 1-2 metres either side
(University Research Farm Trial)



Head raised to 600mm: water moves to surface
through capillary action (University Research Farm Trial)



Objectives

Capiphon Belt vs Drip vs Nil

- Compare soil moisture responses at
 - Surface
 - 250 mm depth
 - 350 mm depth
- Wetting patterns
 - Along rows
 - Across rows
- Observe any plant responses

2 replications * 3 rows
Drip irrigation disabled on rows either side of plot



Capiphon Irrigation (Mk 2) Installed



Header Tank



Measuring Water Volumes

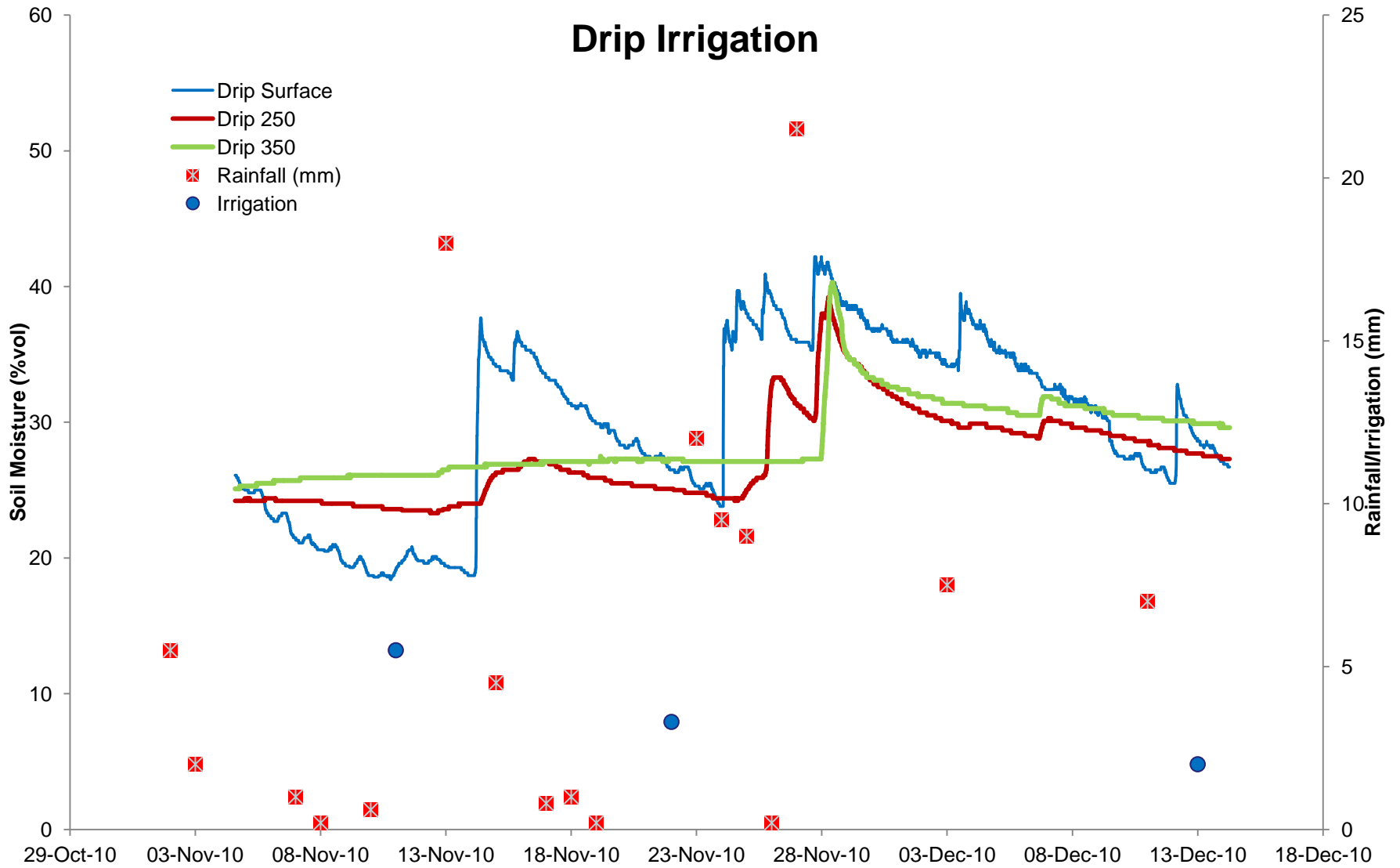


Measuring Soil Moisture

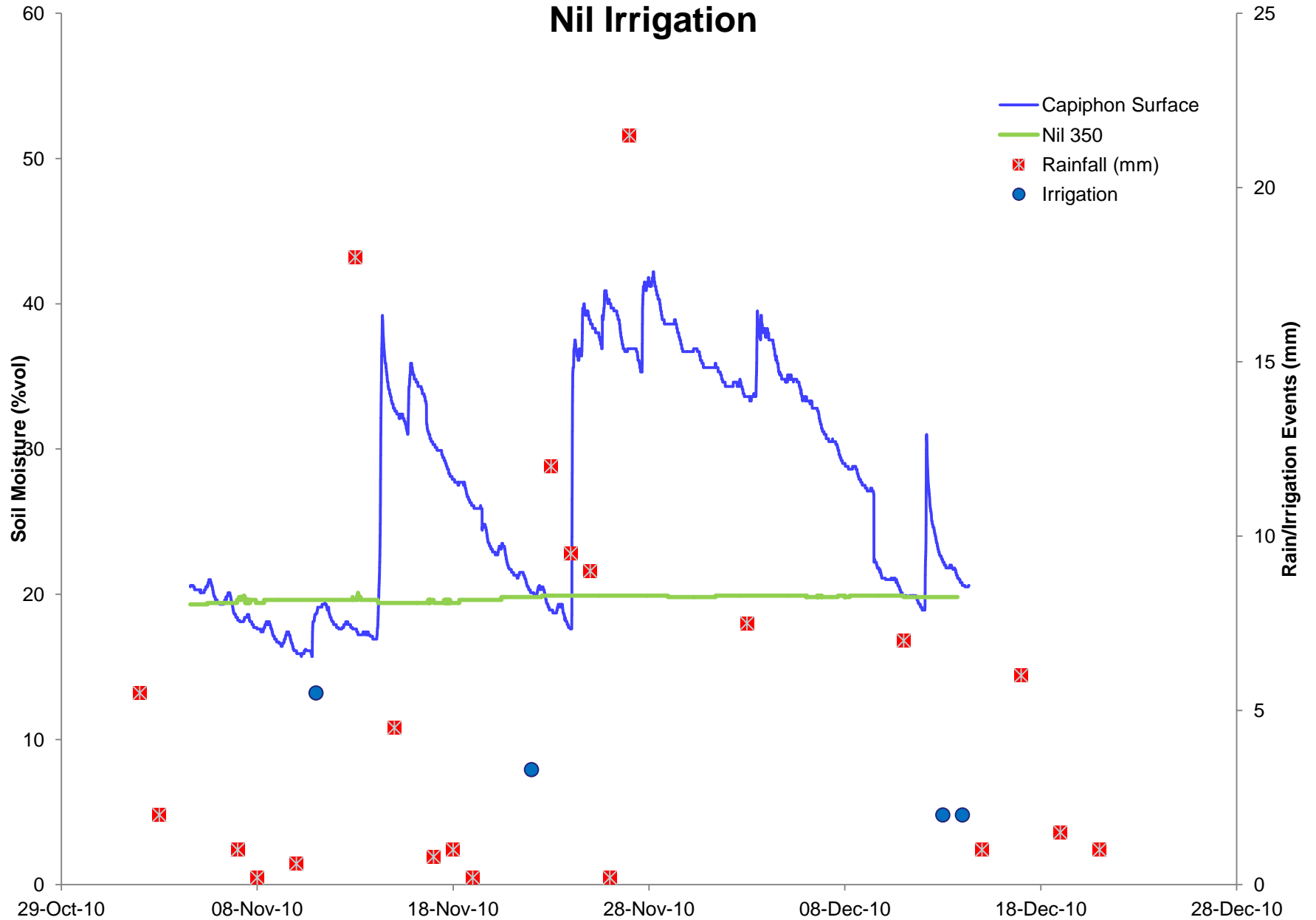
Probes mid-way between vine and Irrigation Trench



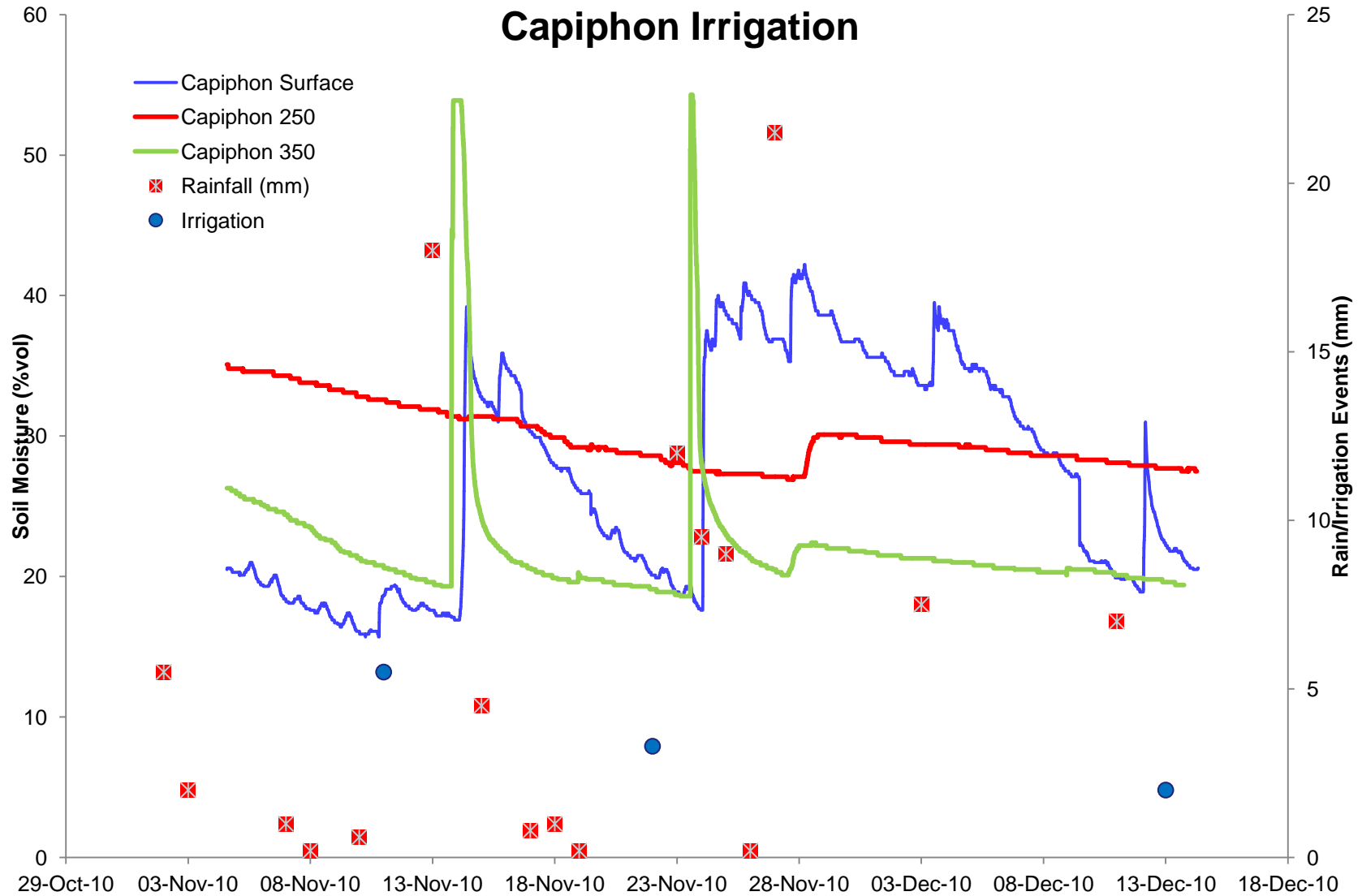
Drip Irrigation



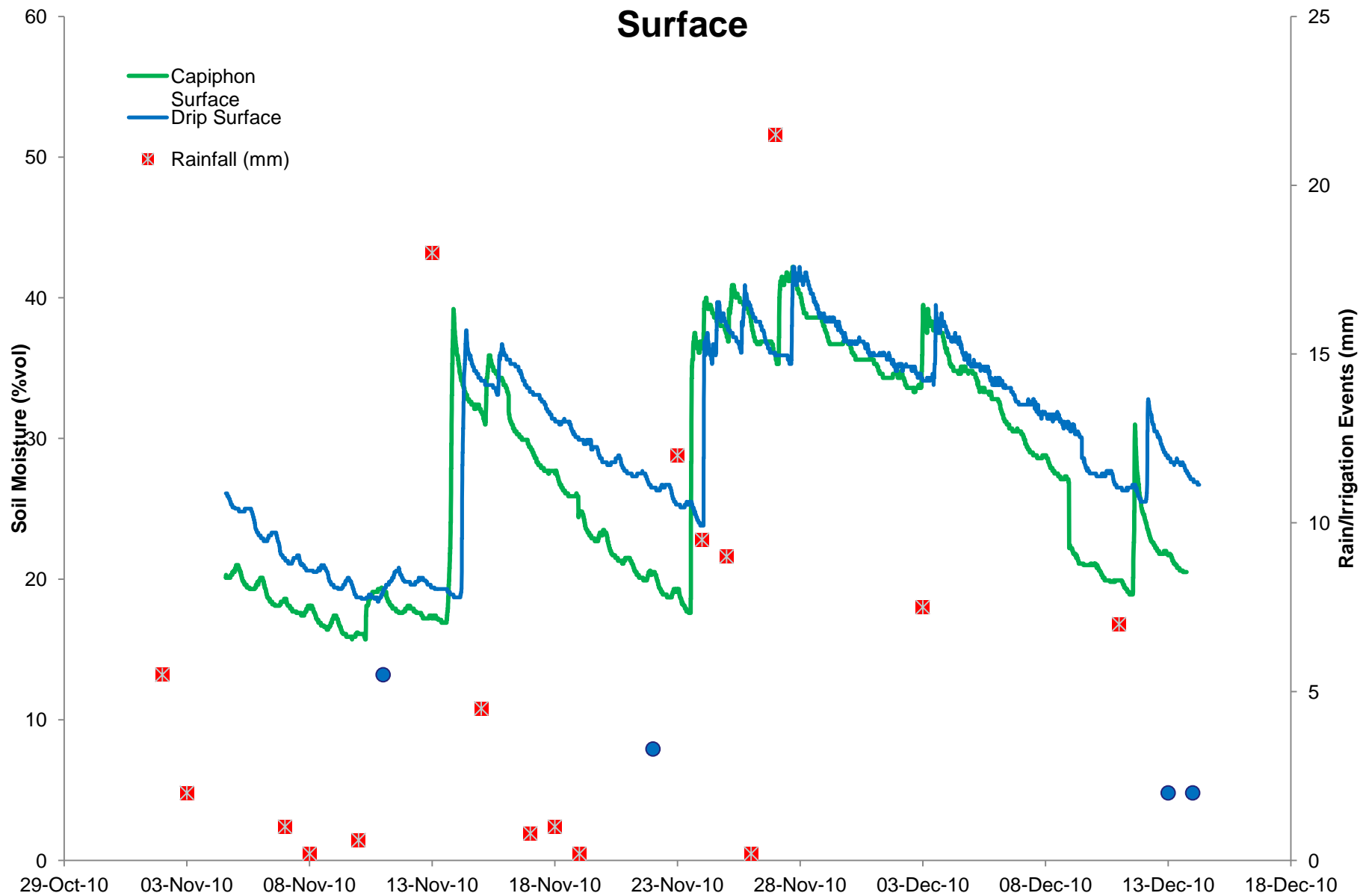
Nil Irrigation



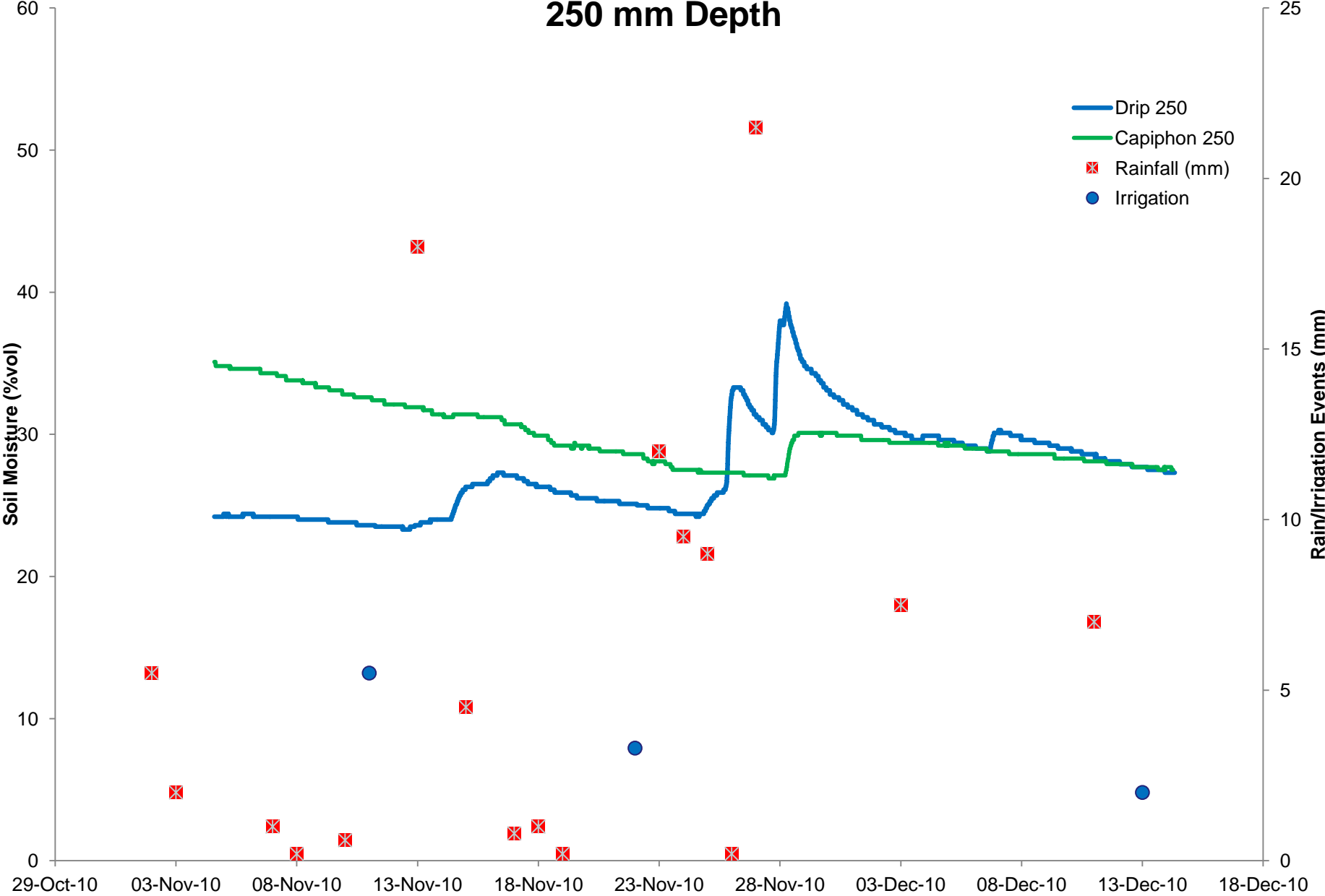
Capiphon Irrigation



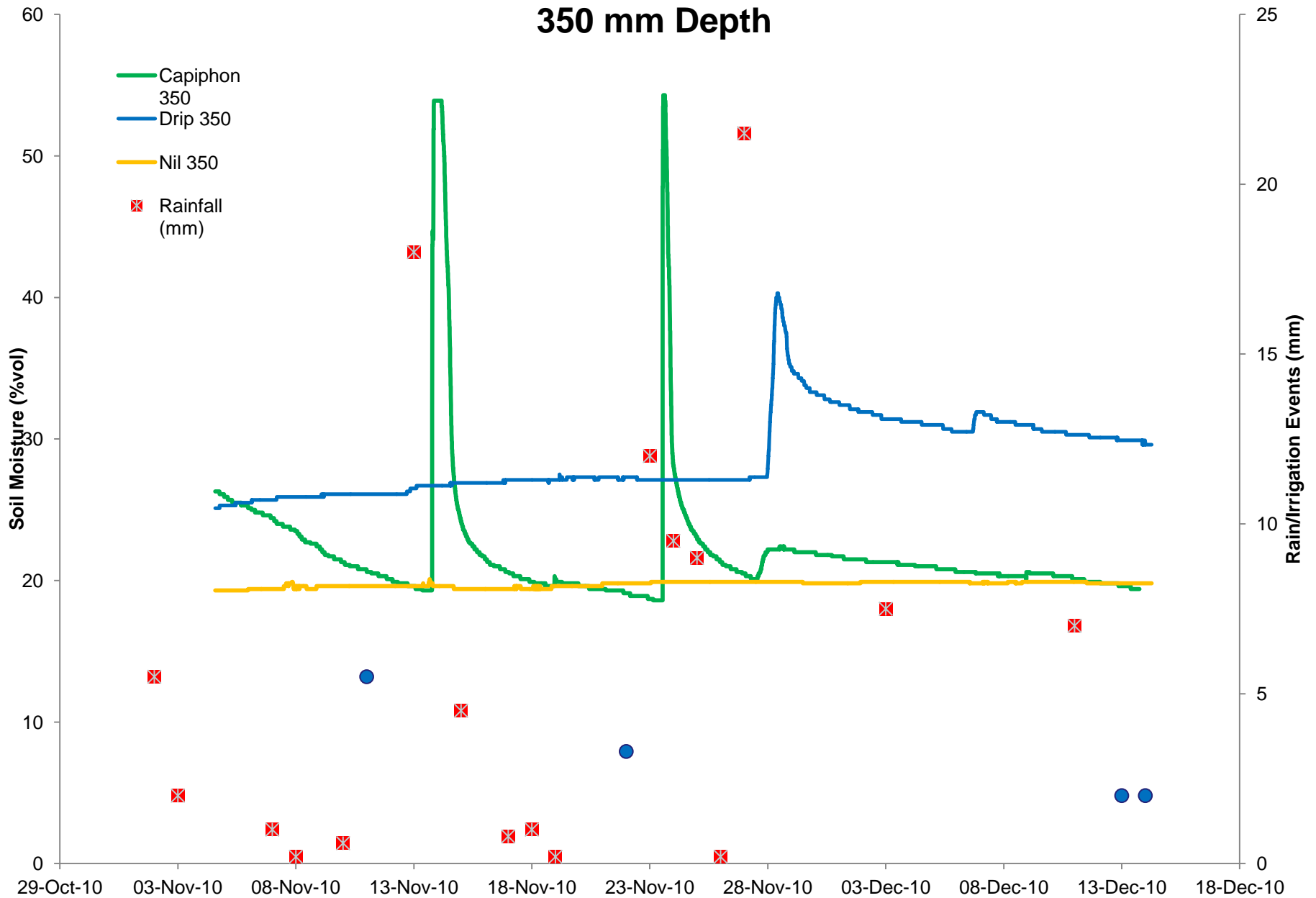
Surface



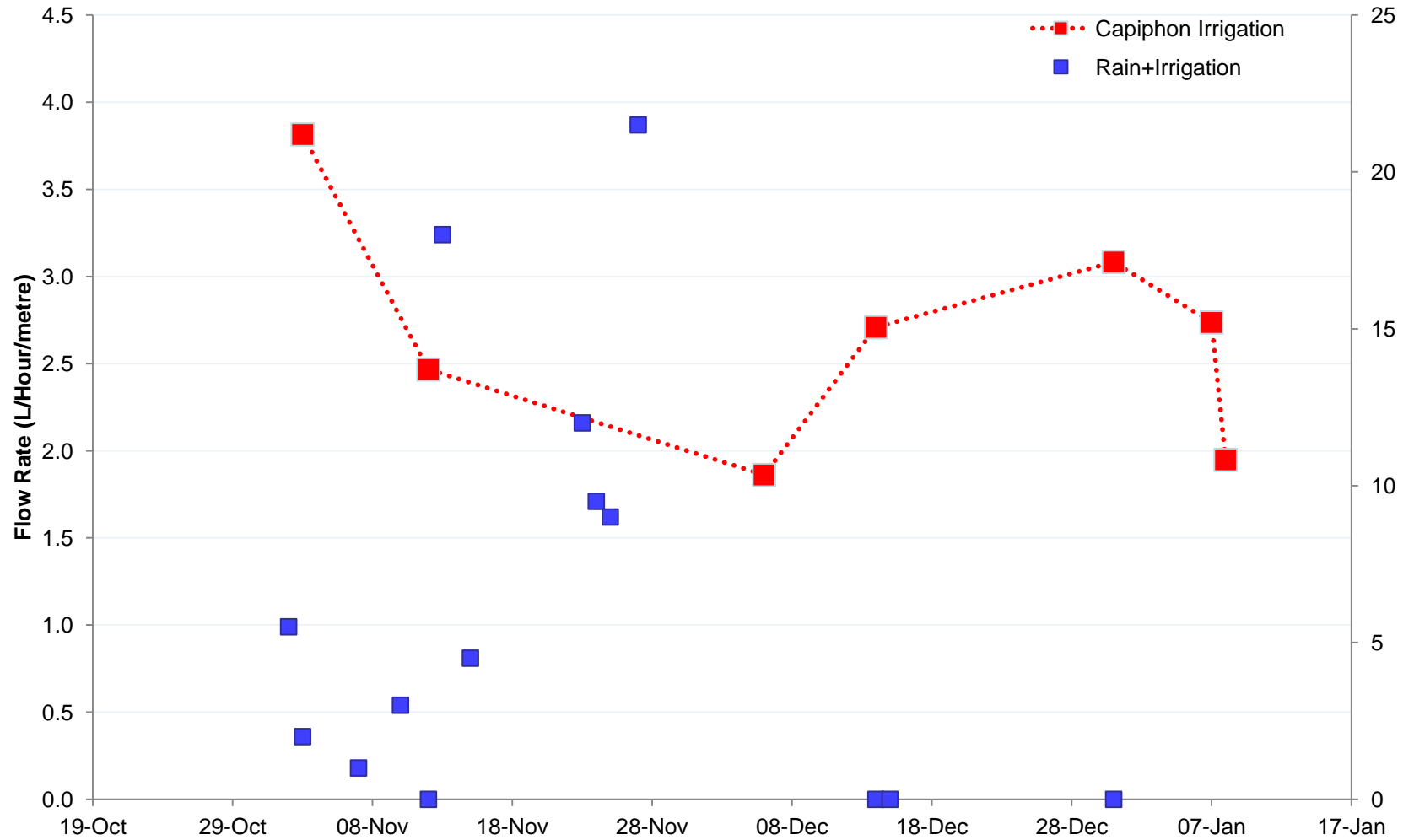
250 mm Depth



350 mm Depth



Flow Rates



Conclusions

- Capiphon can be used to irrigate vineyards.
- Only low head required ~ 30-40 cm
- Level of wetting can be controlled by raising/lowering head
- Wetting band 1-2 metres either side
- Flow rate less than standard drippers.
- Flow rate varies according to existing soil moisture.

Further Work

- Differing soil types/structures
- Wetting patterns in detail
- Optimal depth for differing species
- Plant responses
- Optimal scheduling
- Low pressure water supply
- Mechanical installation