

Determining Irrigation Needs: Monitoring Soil Moisture

An Advanced and Innovative Irrigation Scheduling System

Implemented by

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McGill University

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McGill University

Canada 

 Ontario



McGill




WIN
Weather INnovations Incorporated

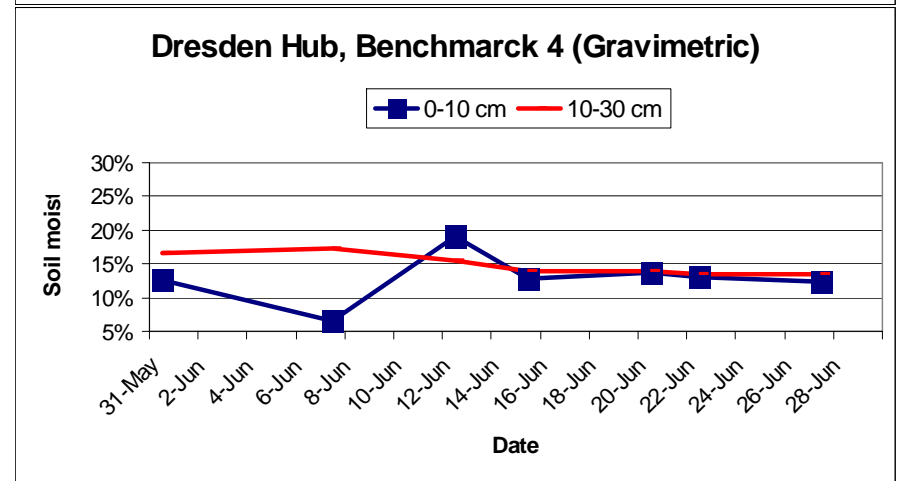
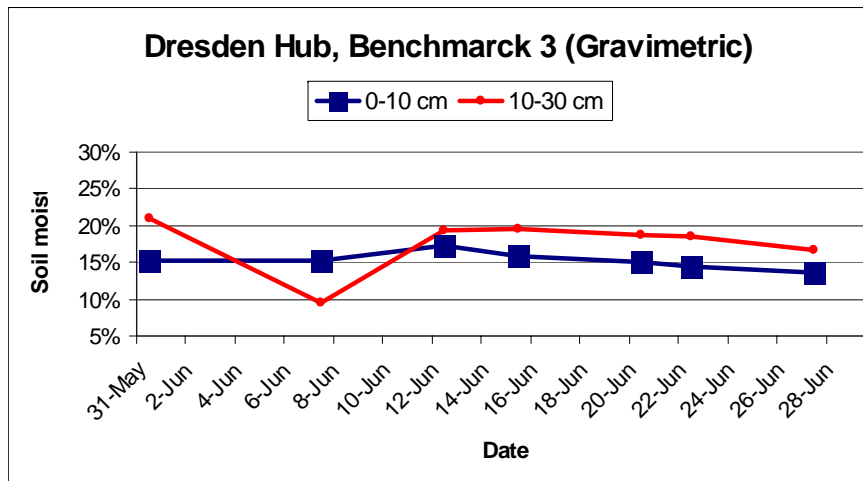
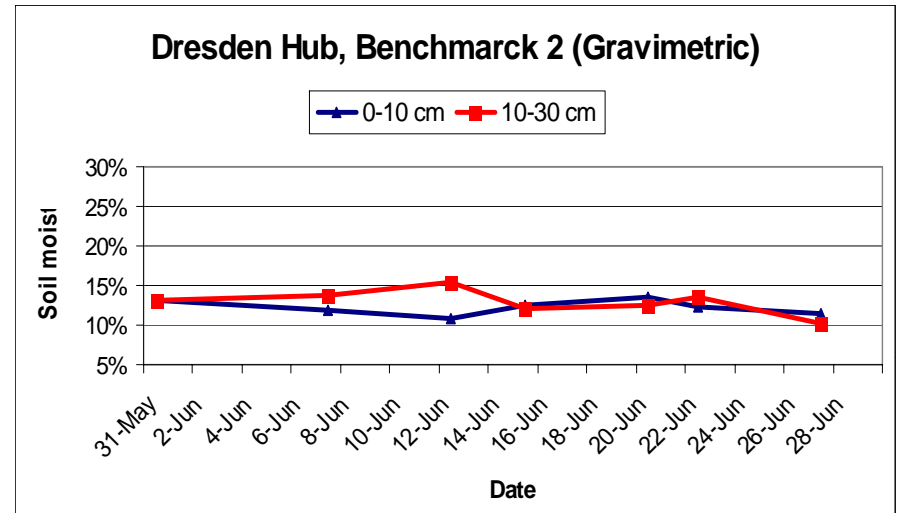
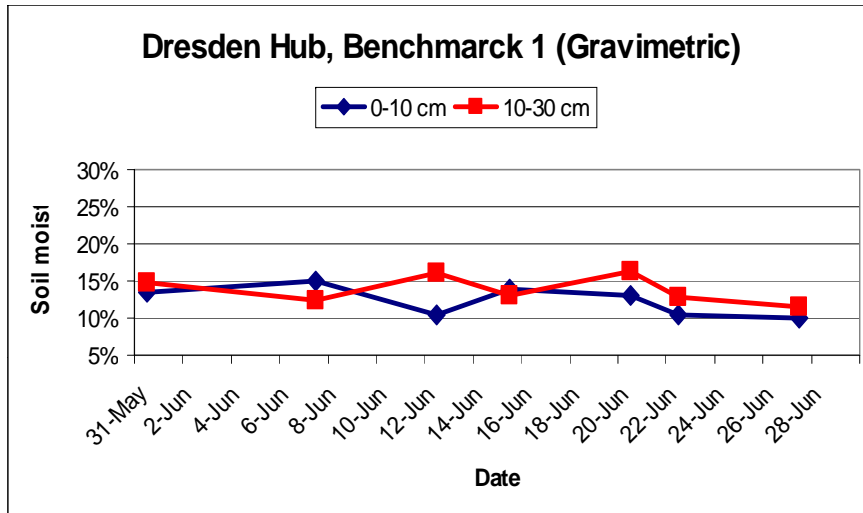
Dresden

Ways of Monitoring Soil Moisture

- Volumetric
 - Gravimetric Sampling
 - Portable FieldScout TDR
 - Campbell Reflectometers (TDR)
 - Gro-point Sensors
- Soil Tension
 - Manual Tensiometers
 - Watermark Sensors
 - Hortau Sensors
- C-Probe (can be translated into vol.)
- Echo Probe (can be translated into vol.)

Gravimetric Sampling at Benchmarks

(Jennen, Dresden Hub)

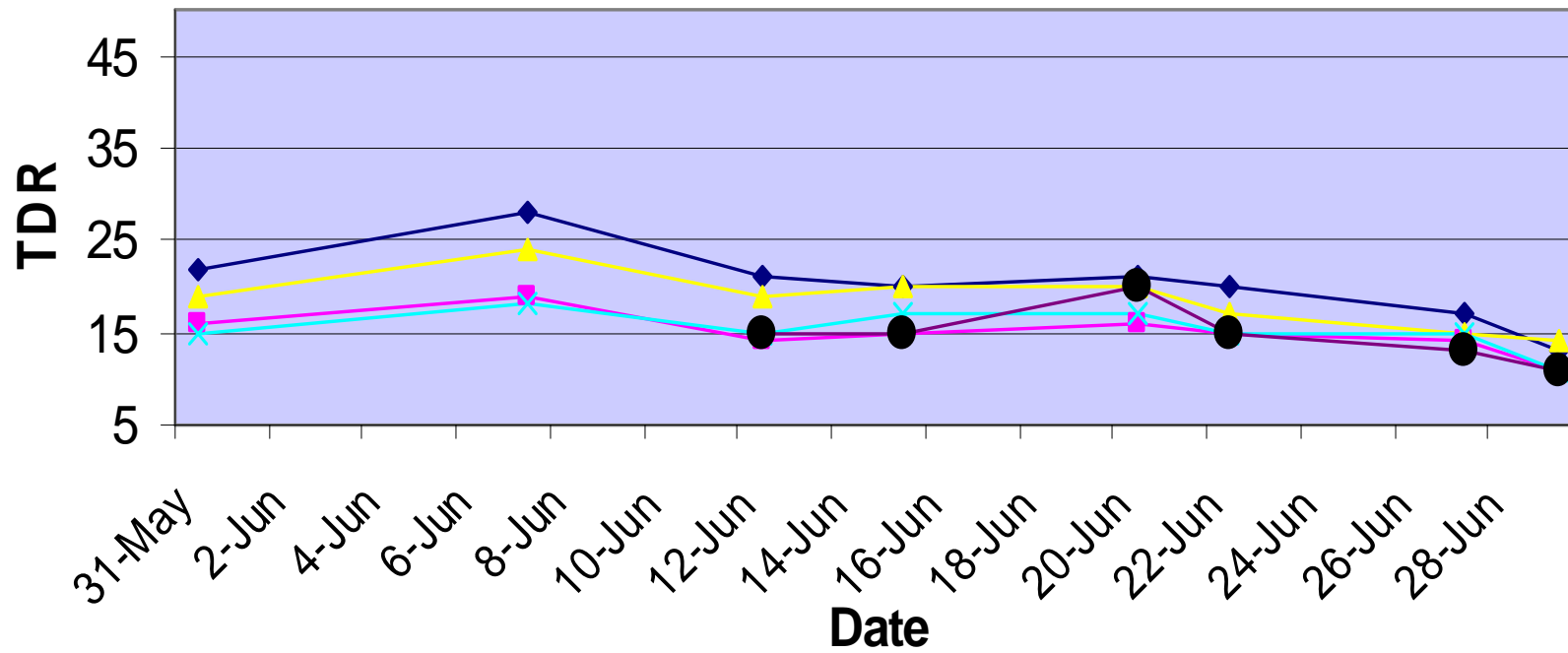


Samples taken at Jennen's site, at the 4 Benchmarks to identify spatial variability in soil (BM1...4). GS1: 0-10 cm; GS2: 10-30 cm

FieldScout TDR Readings

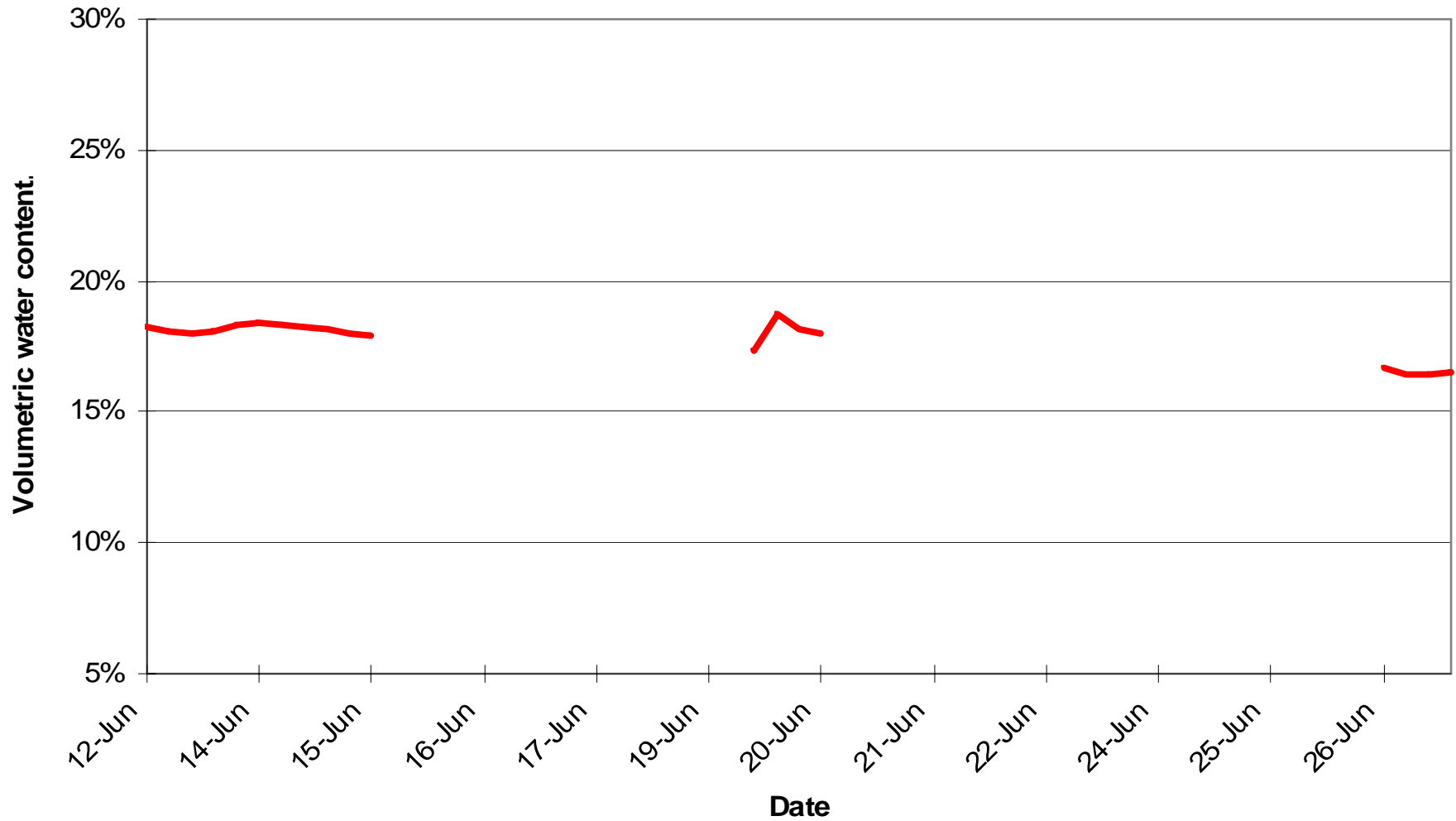
Main Equipment (ME) and Benchmarks (BM1...4) at Jennen's site

Average Volumetric Water Content (0-30 cm)
DH-TDR

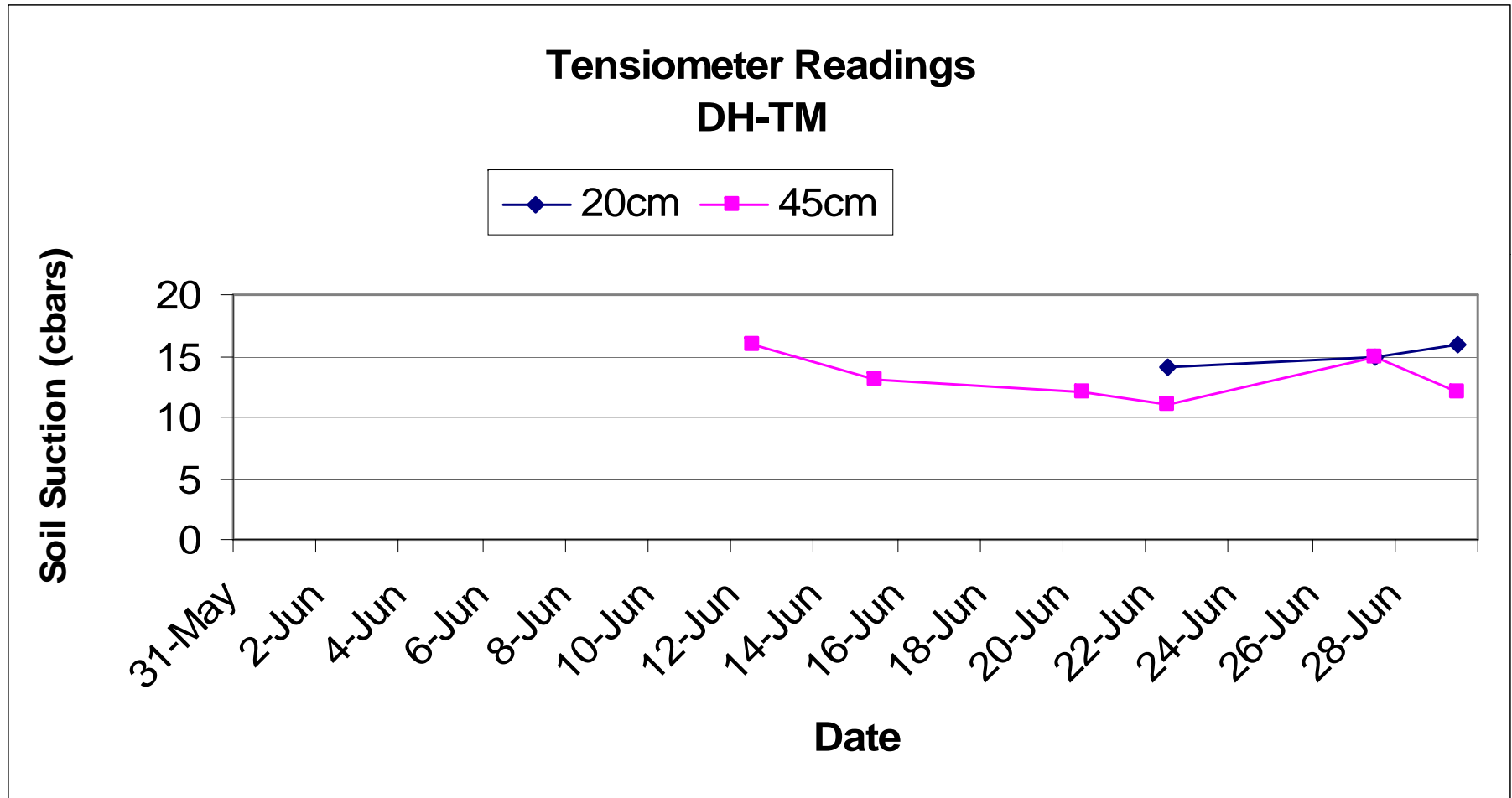


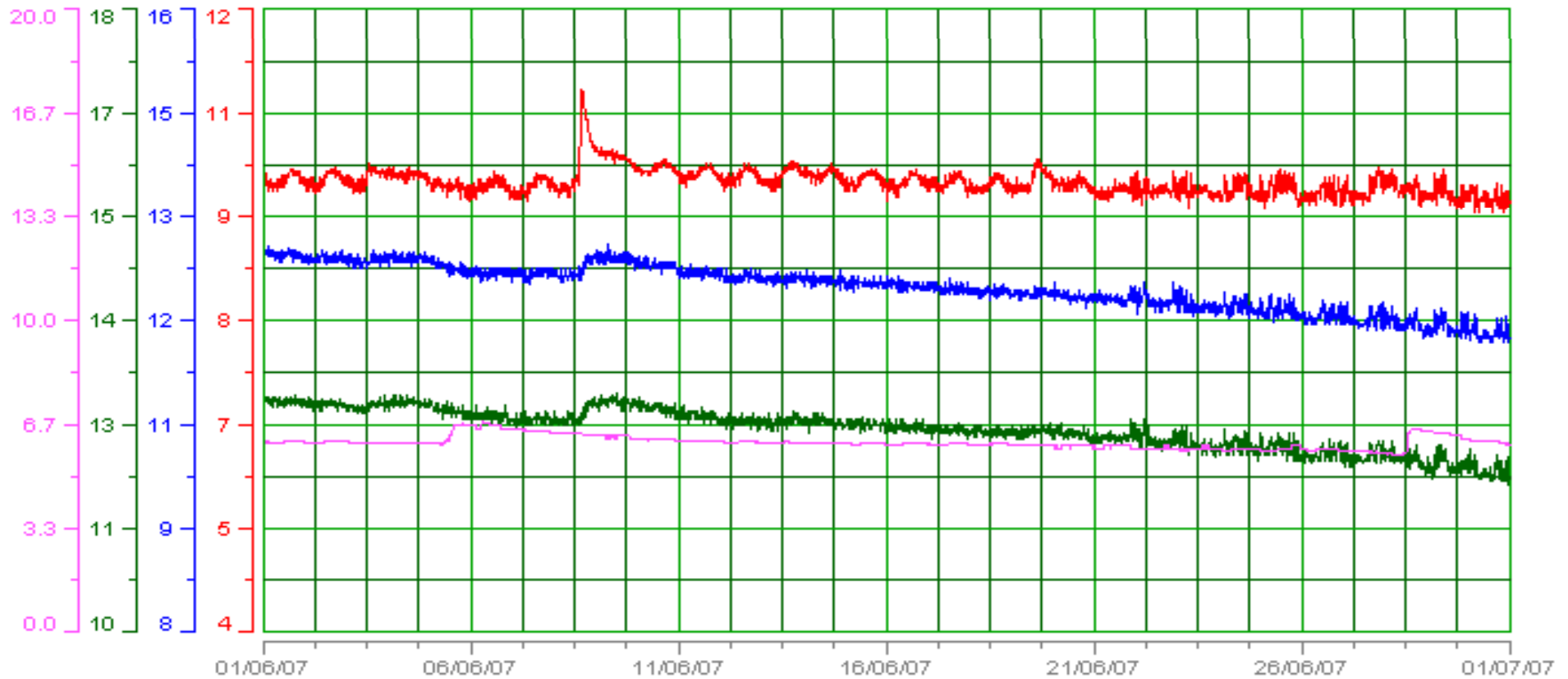
Campbell Reflectometers at Jennen's, Dresden

Average Volumetric Water Content (%) from 0 - 30 cm



Manual Tensiometer at Jennen's, Dresden



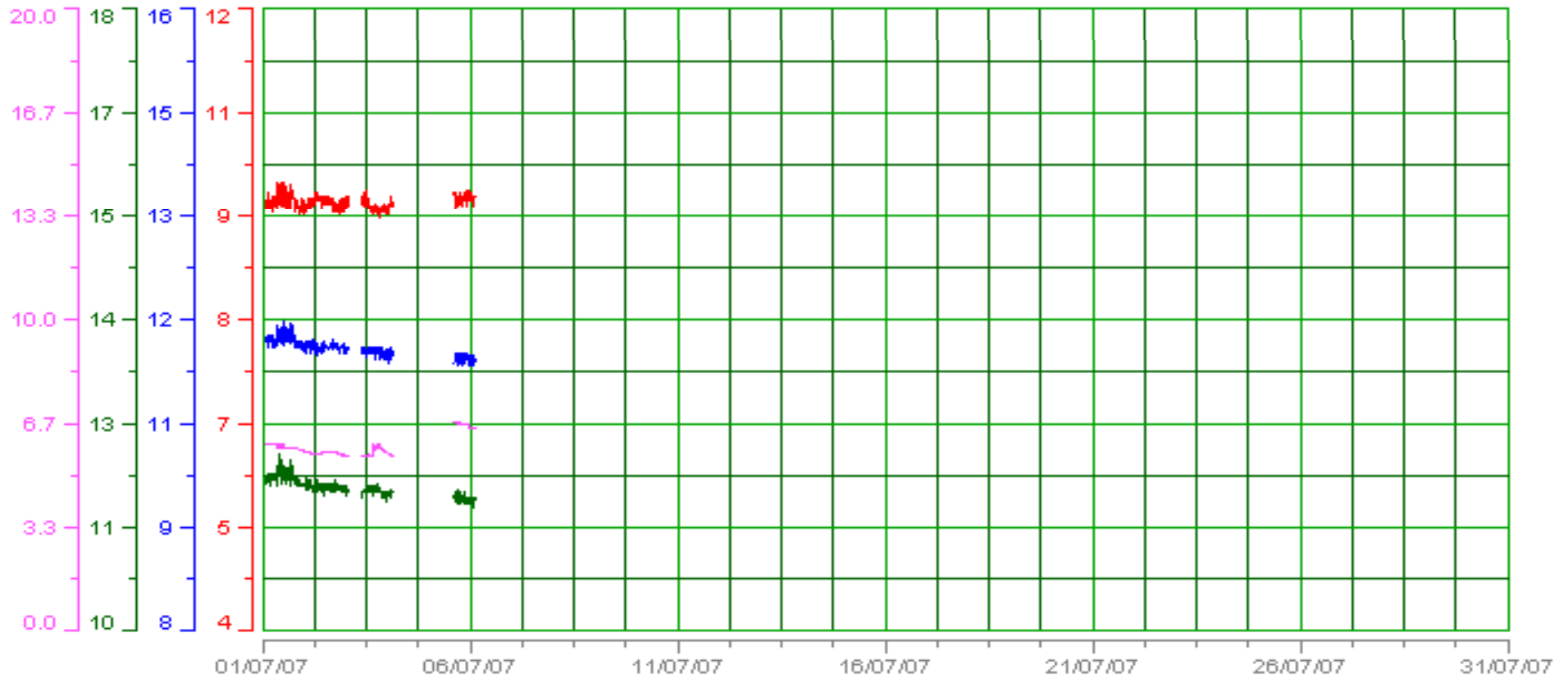


Legend:

Color	Name	Last Value
■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/Soil Moisture/C-Probe 10cm (24043 - Jennens Pepper Soil Moisture) (vol%)	10 vol% at 6-Jul-2007 1:41:49 AM
■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/Soil Moisture/C-Probe 30cm (24043 - Jennens Pepper Soil Moisture) (vol%)	11 vol% at 6-Jul-2007 1:41:49 AM
■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/Soil Moisture/C-Probe 50cm (24043 - Jennens Pepper Soil Moisture) (vol%)	12 vol% at 6-Jul-2007 1:41:49 AM
■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/24043 - Jennens Pepper Soil Moisture/Battery Voltage (V)	6.6 V at 6-Jul-2007 1:41:49 AM



1-Jul-2007



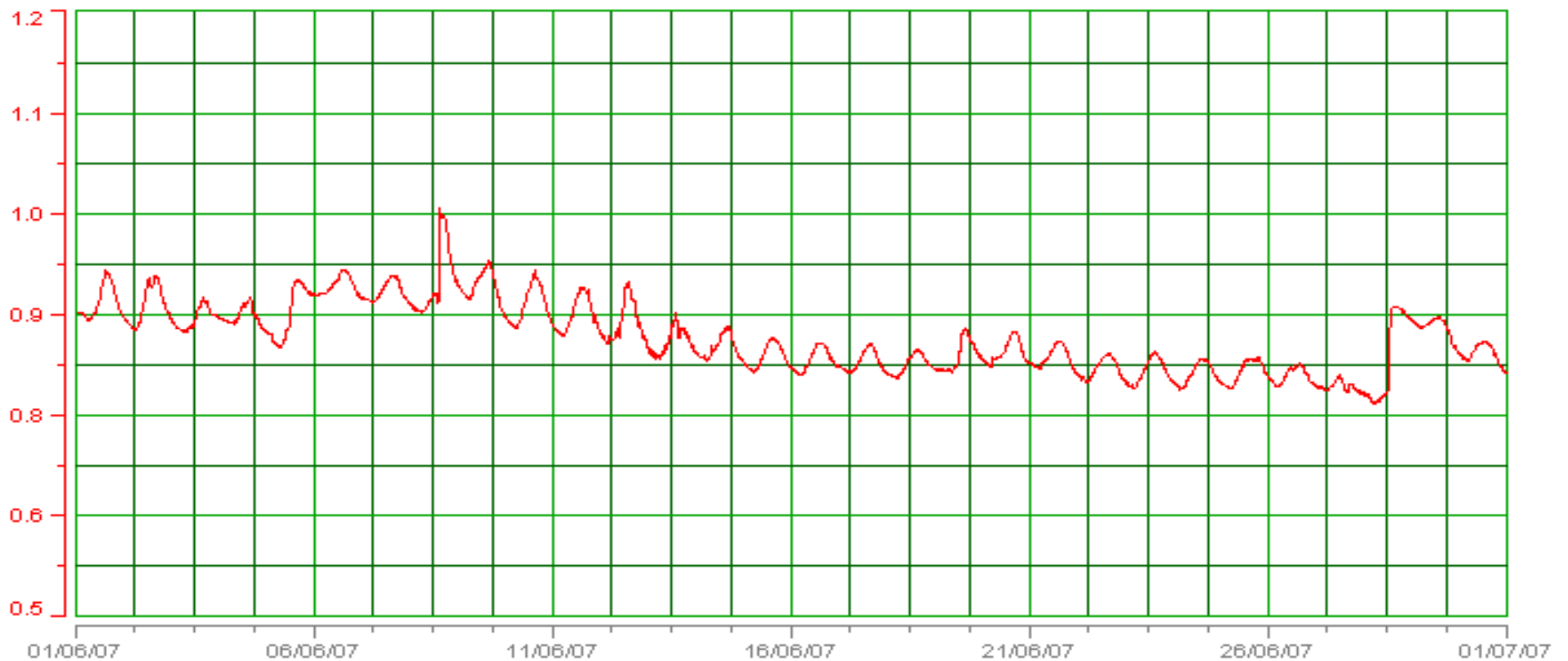
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■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/24043 - Jennens Pepper Soil Moisture/Battery Voltage (V)	6.6 V at 6-Jul-2007 1:41:49 AM

Echo Probe – June 2007

(Average rV 0 – 30 cm)

/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/SM - Echo



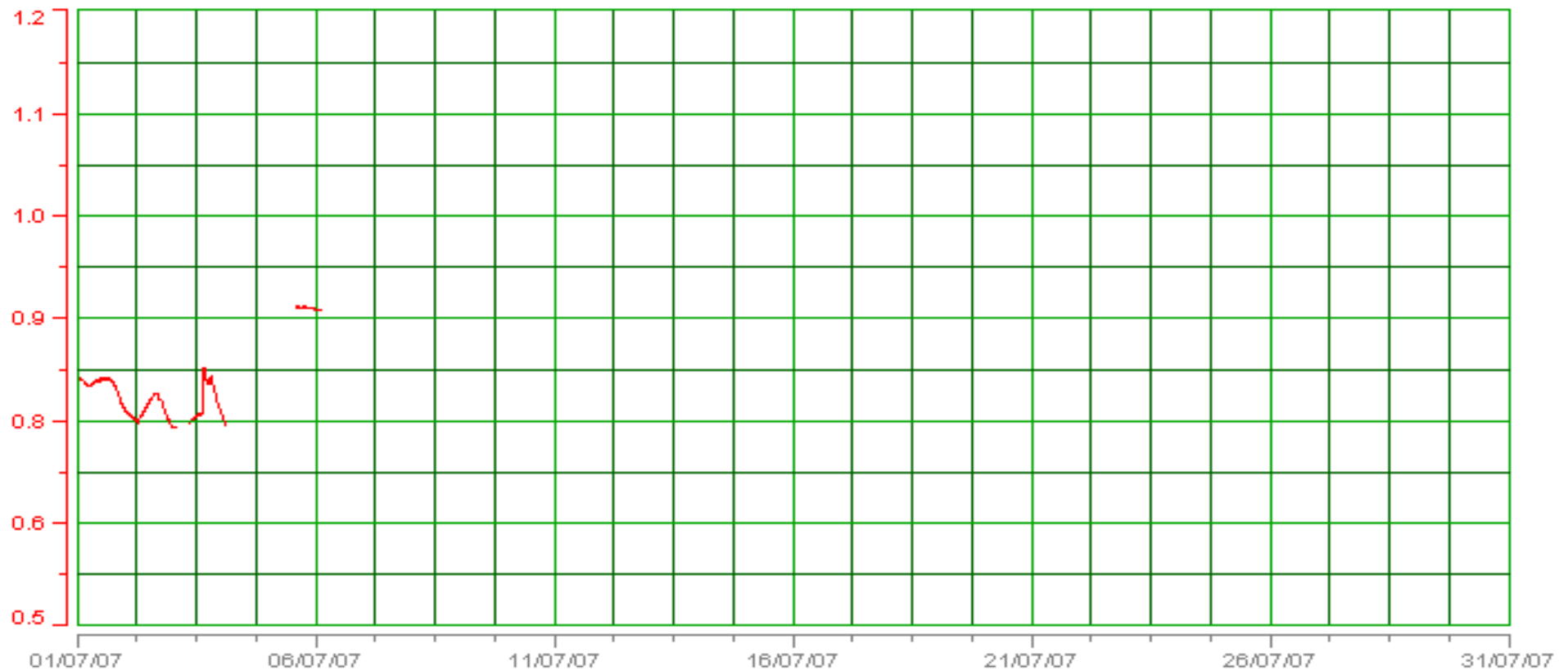
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Echo Probe – July 2007

(Average rV 0 – 30 cm)

/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/SM - Echo



Legend:

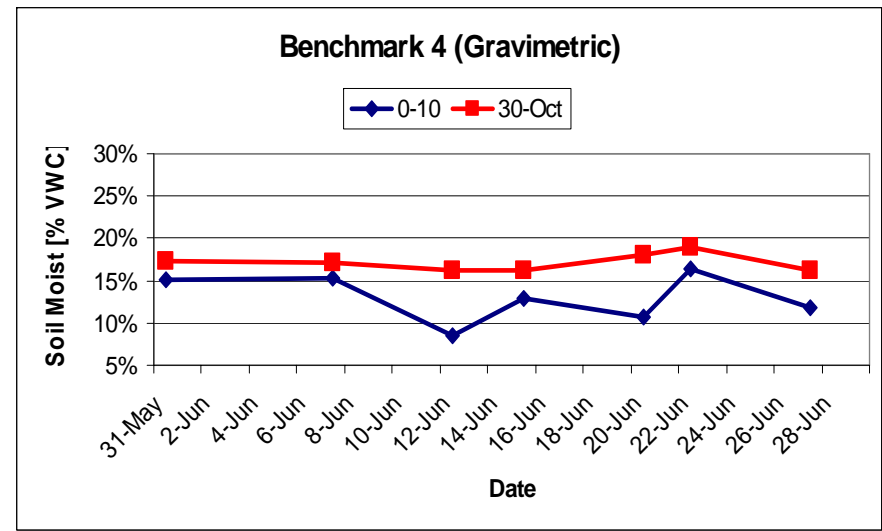
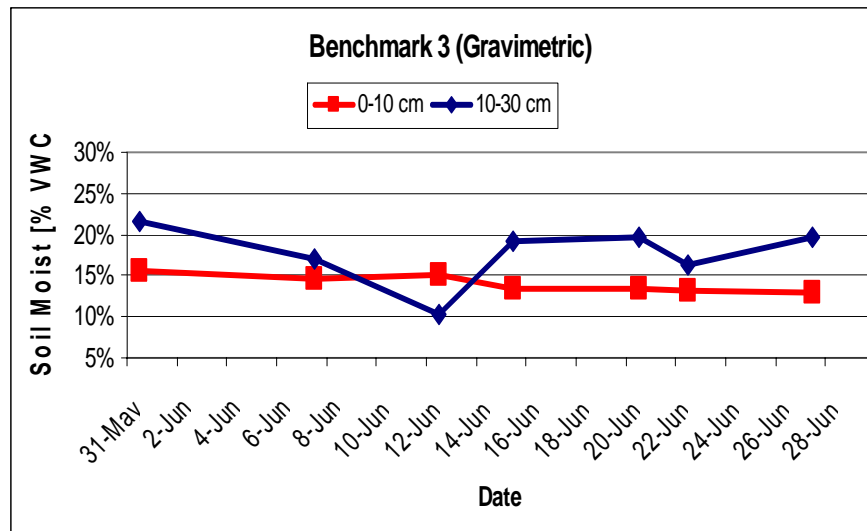
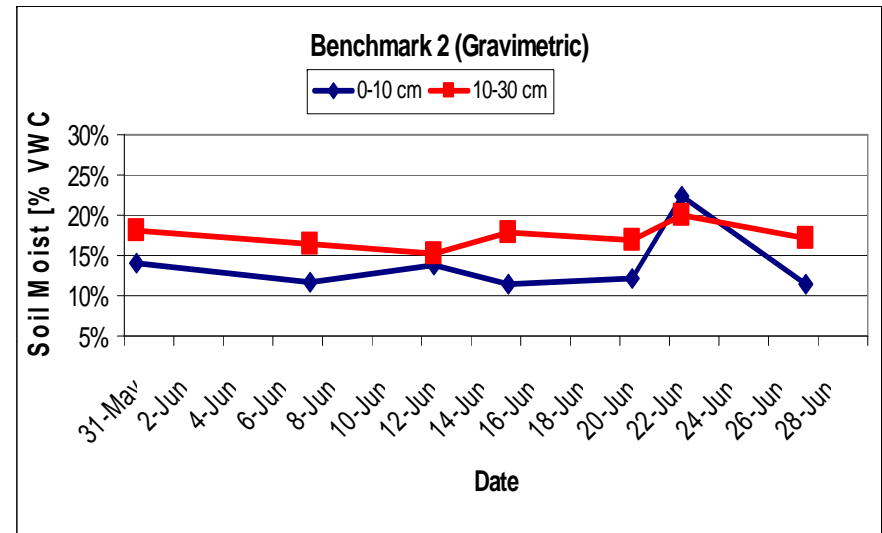
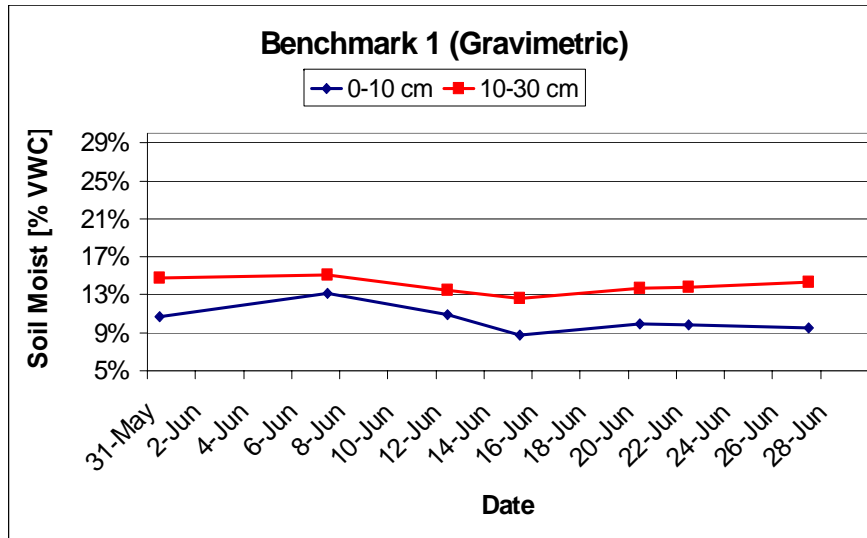
Color	Name	Last Value
■	/WIN 2007/Chatham Wireless/COWSEP/Jennens Pepper Soil Moisture/24043 - Jennens Pepper Soil Moisture/Decagon Echo Probe C3 (V)	0.9 V at 6-Jul-2007 1:41:49 AM



Satellite Sites

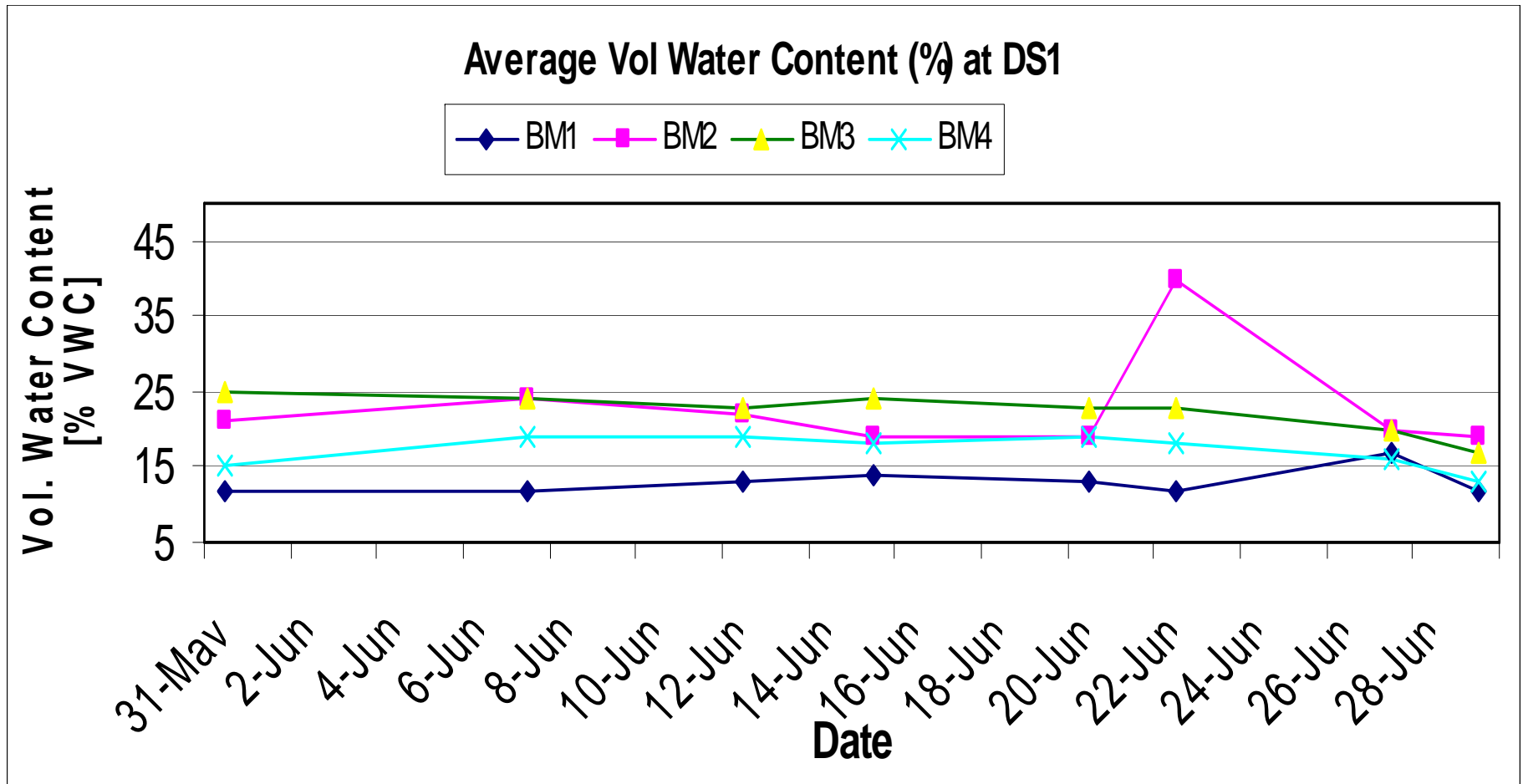
- Gravimetric Sampling
- TDR FieldScout

Satellite 1 (Gravimetric)

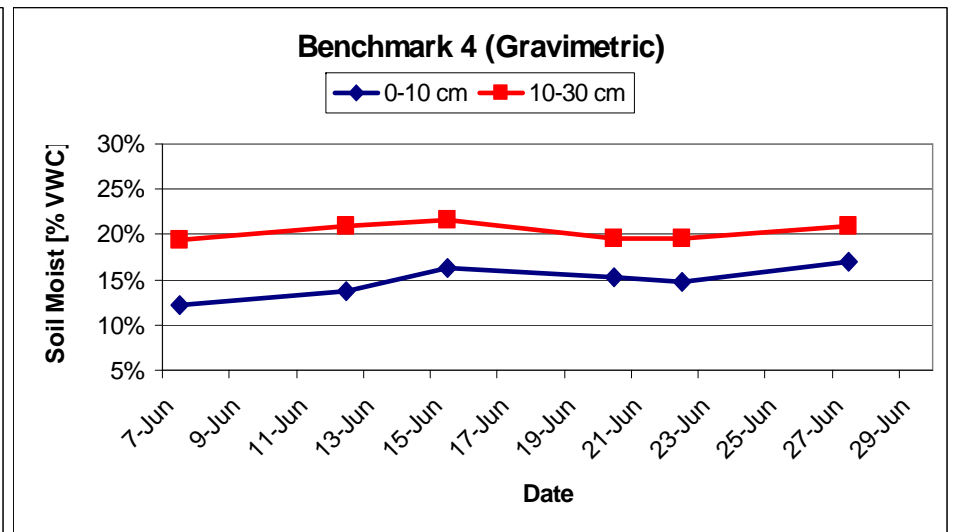
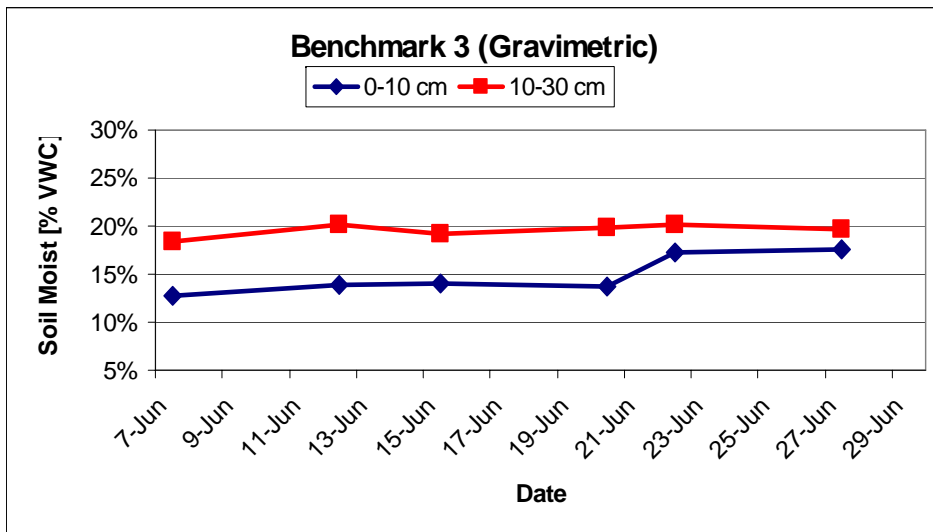
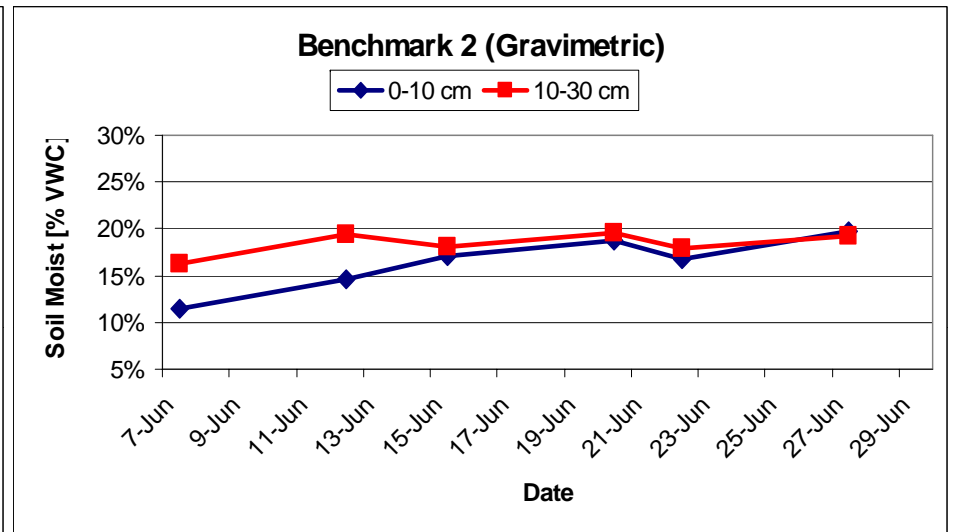
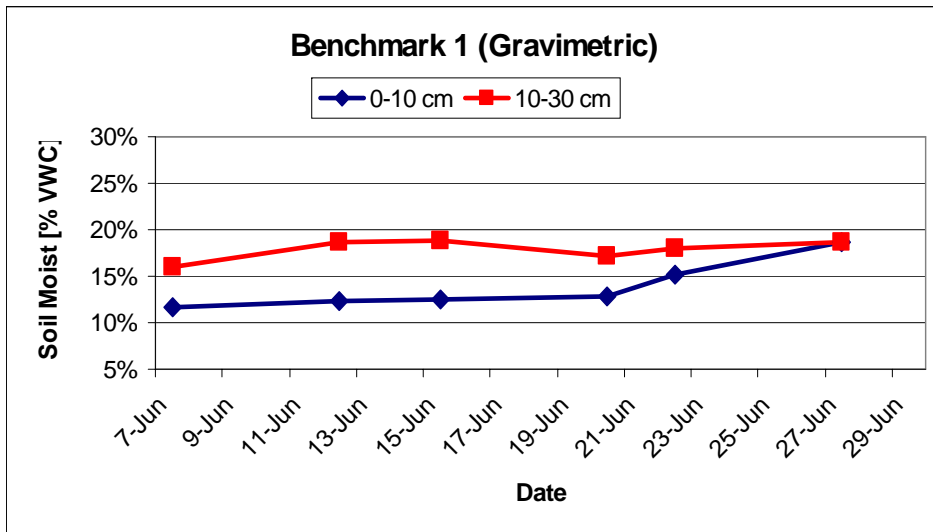


FieldScout TDR at Dresden

Satellite 1

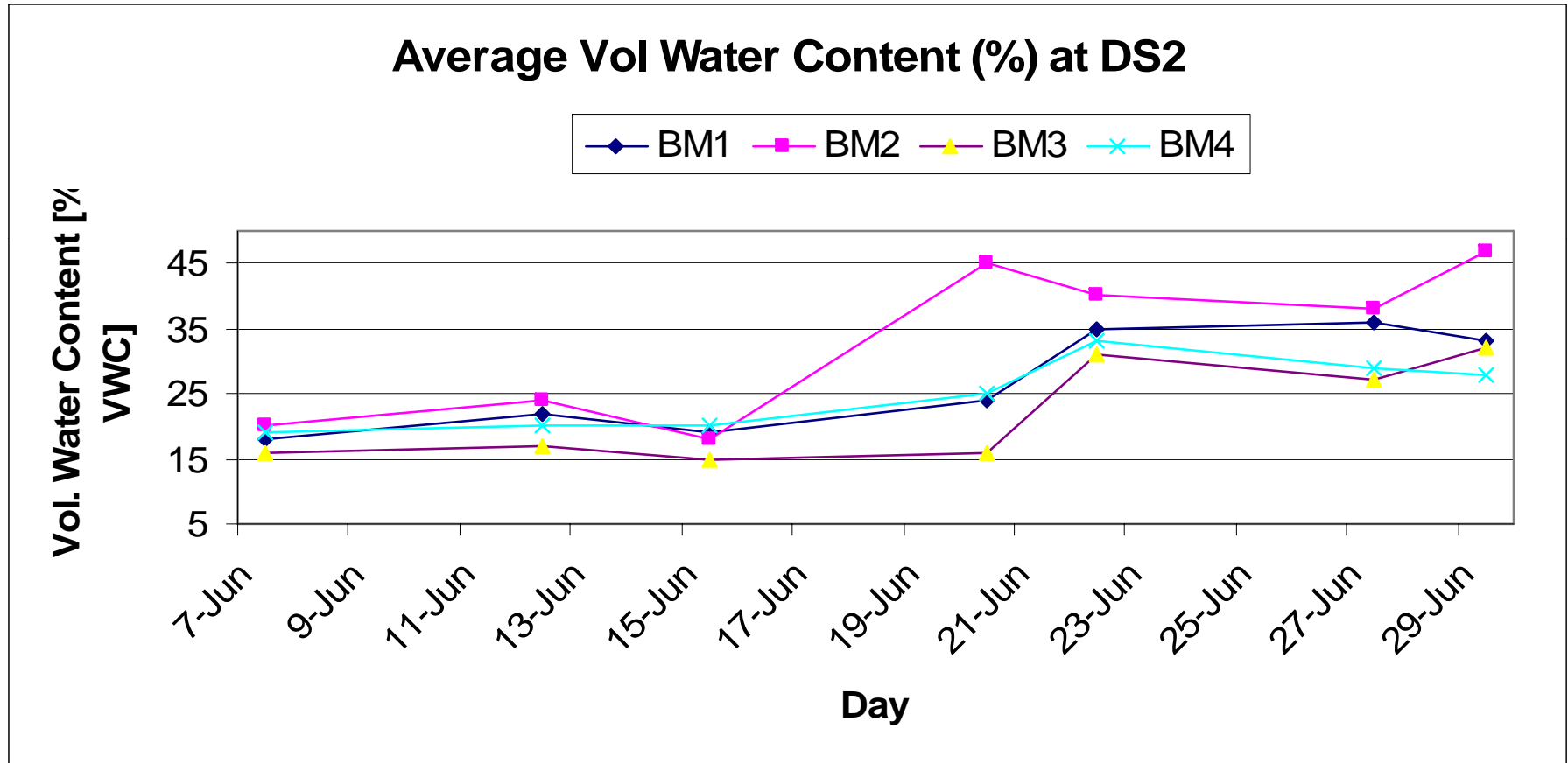


Satellite 2 (Gravimetric)

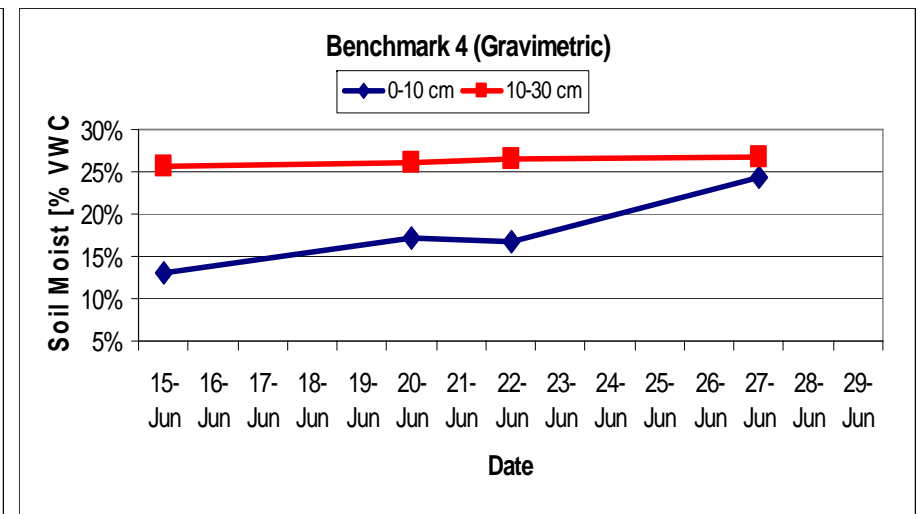
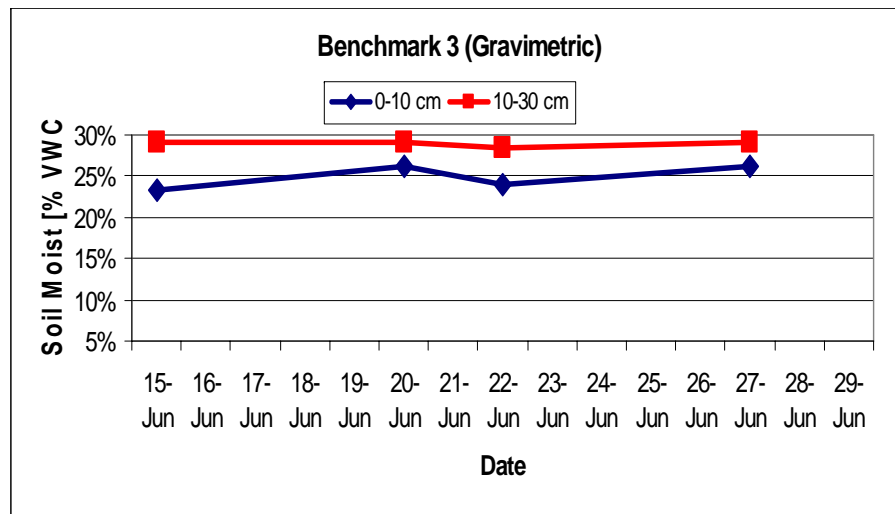
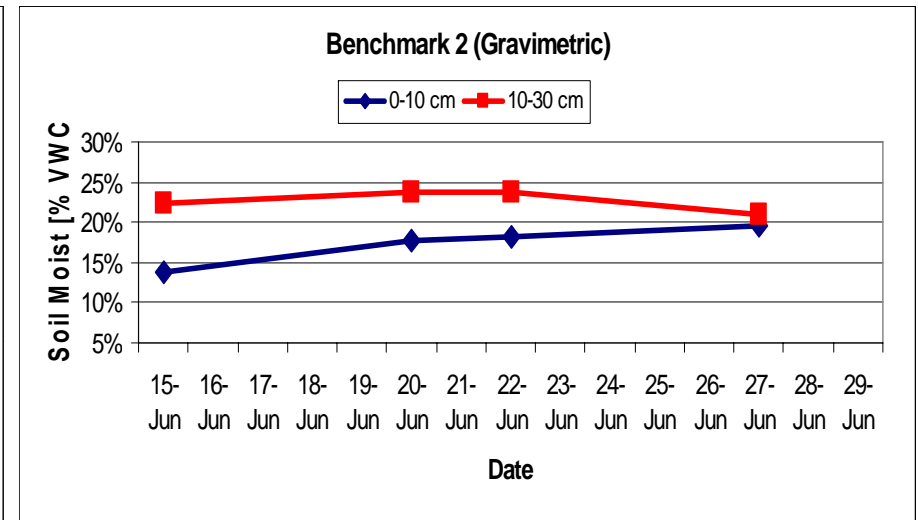
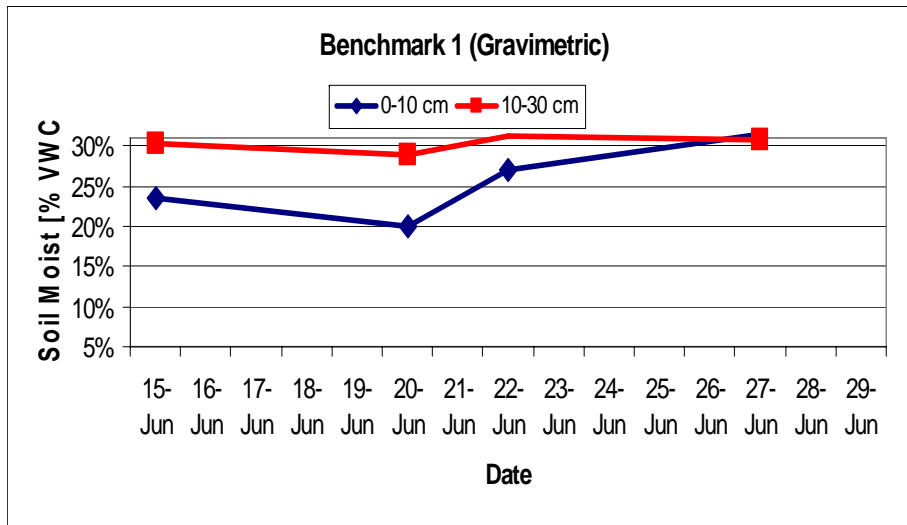


FieldScout TDR at Dresden

Satellite 2



Satellite 3 (Gravimetric)



FieldScout TDR at Dresden

Satellite 3

