Determining Irrigation Needs: Monitoring Soil Moisture

An Advanced and Innovative Irrigation Scheduling System

Implemented by

The Brace Centre for Water Resources Management

McGill University

Chandra A. Madramootoo P.Eng., Project Director

Dean of Agricultural and Environmental Sciences

McGill University

Canada Ontario McGill Brace WIN Weather INnovations Incorporated

Methods of Monitoring Soil Moisture

- Volumetric
  - Gravimetric Sampling
  - Portable FieldScout TDR
  - Campbell Reflectometers (TDR)
  - Gro-point Sensors

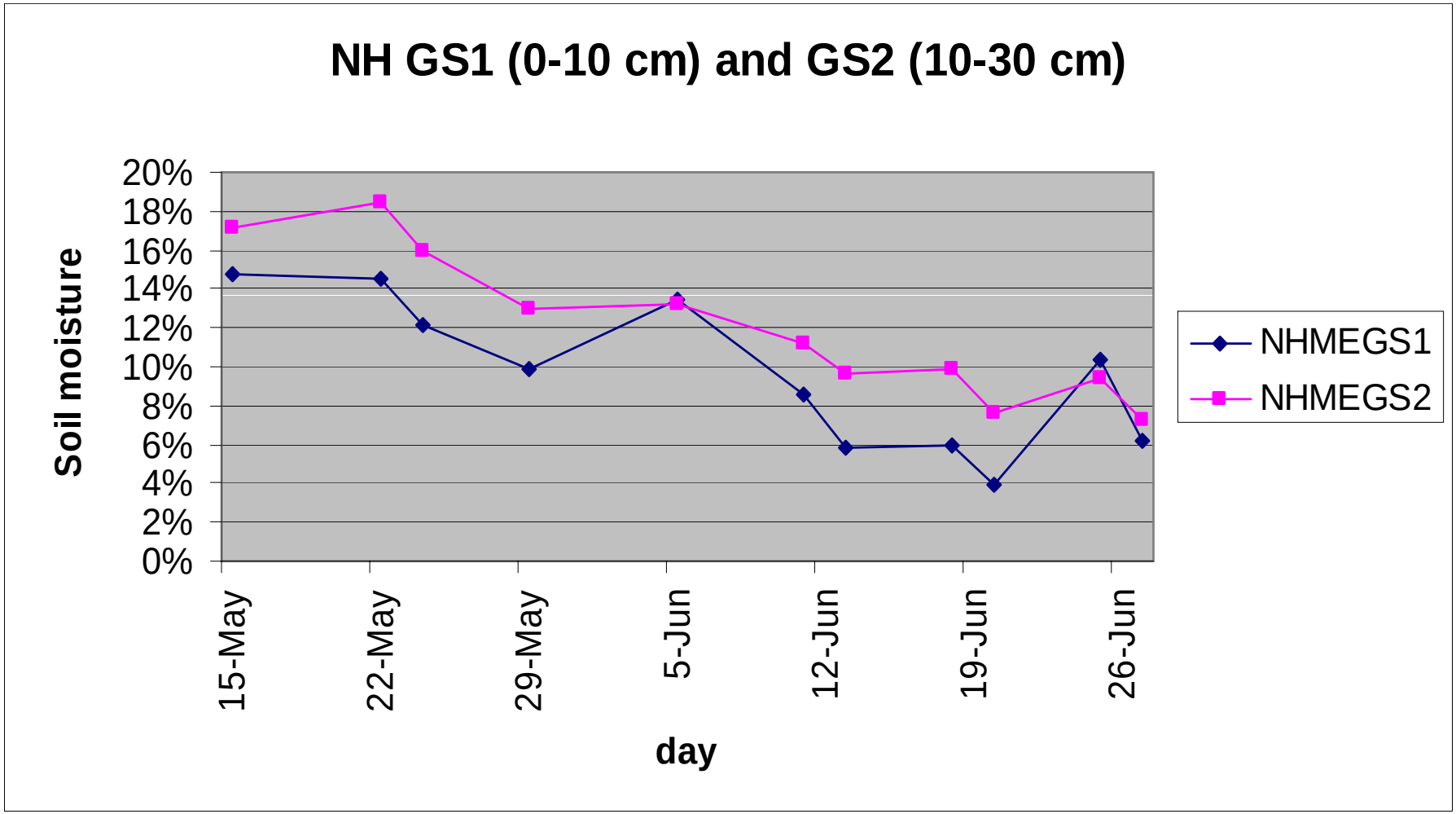
- Soil Tension
  - Manual Tensiometers
  - Watermark Sensors
  - Hortau Sensors

- C-Probe (can be translated into vol.)

- Echo Probe (can be translated into vol.)

Gravimetric Sampling in Main Equipment Zone

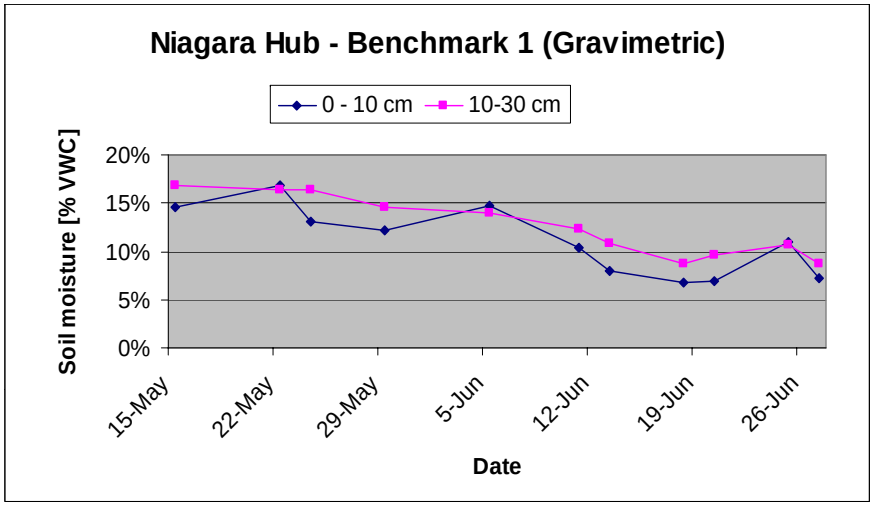
(John Fedorkow, Niagara Hub)

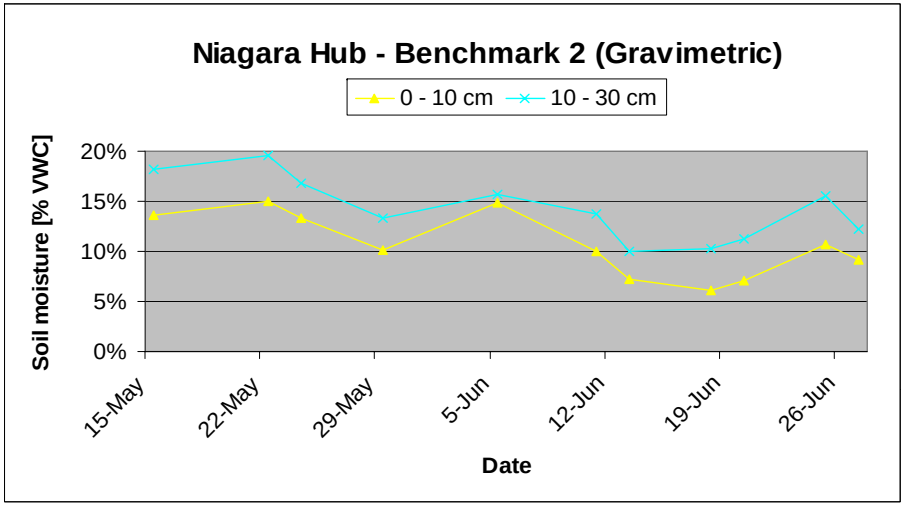


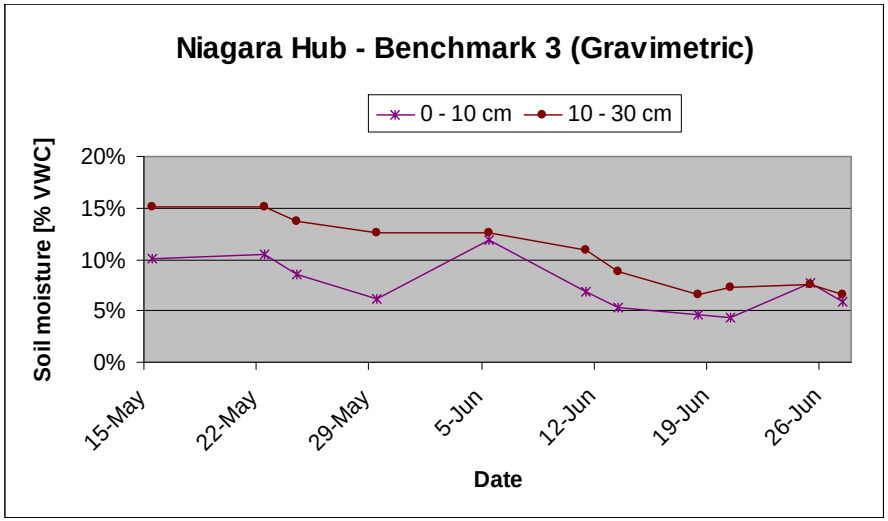
At Fedorkow's site, NOTL. Two Depths GS1 = 0-10 cm; GS2 = 10-30 cm
Shown for Main Equipment sampling location (ME)

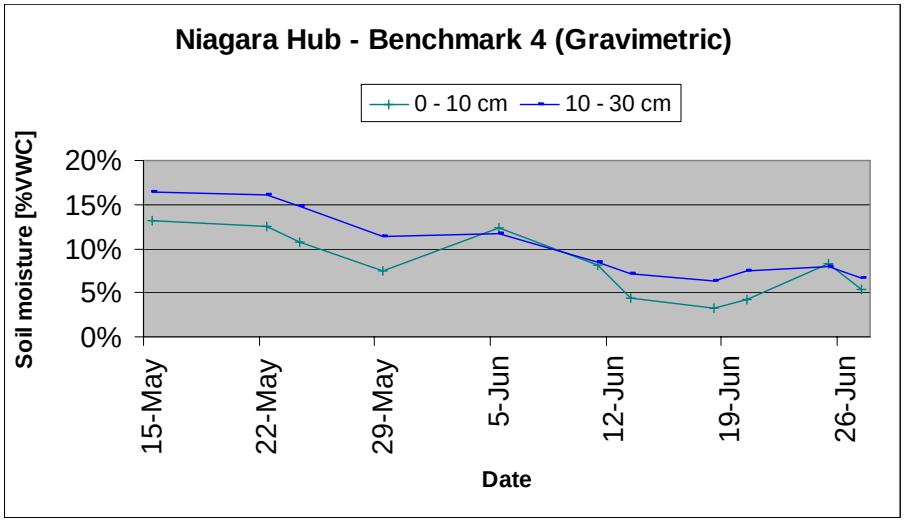
Gravimetric Sampling at Benchmarks

(John Fedorkow, Niagara Hub)





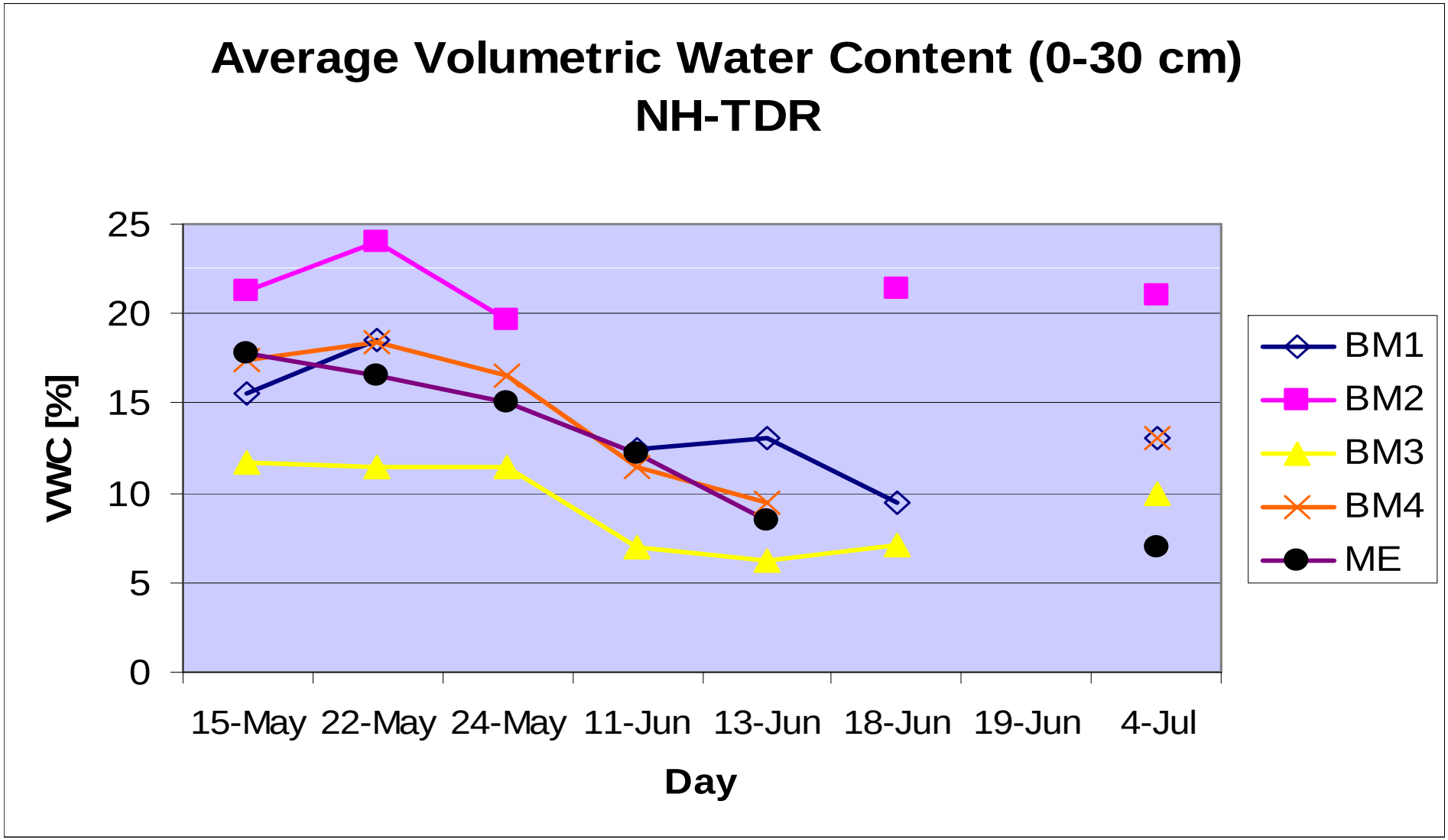




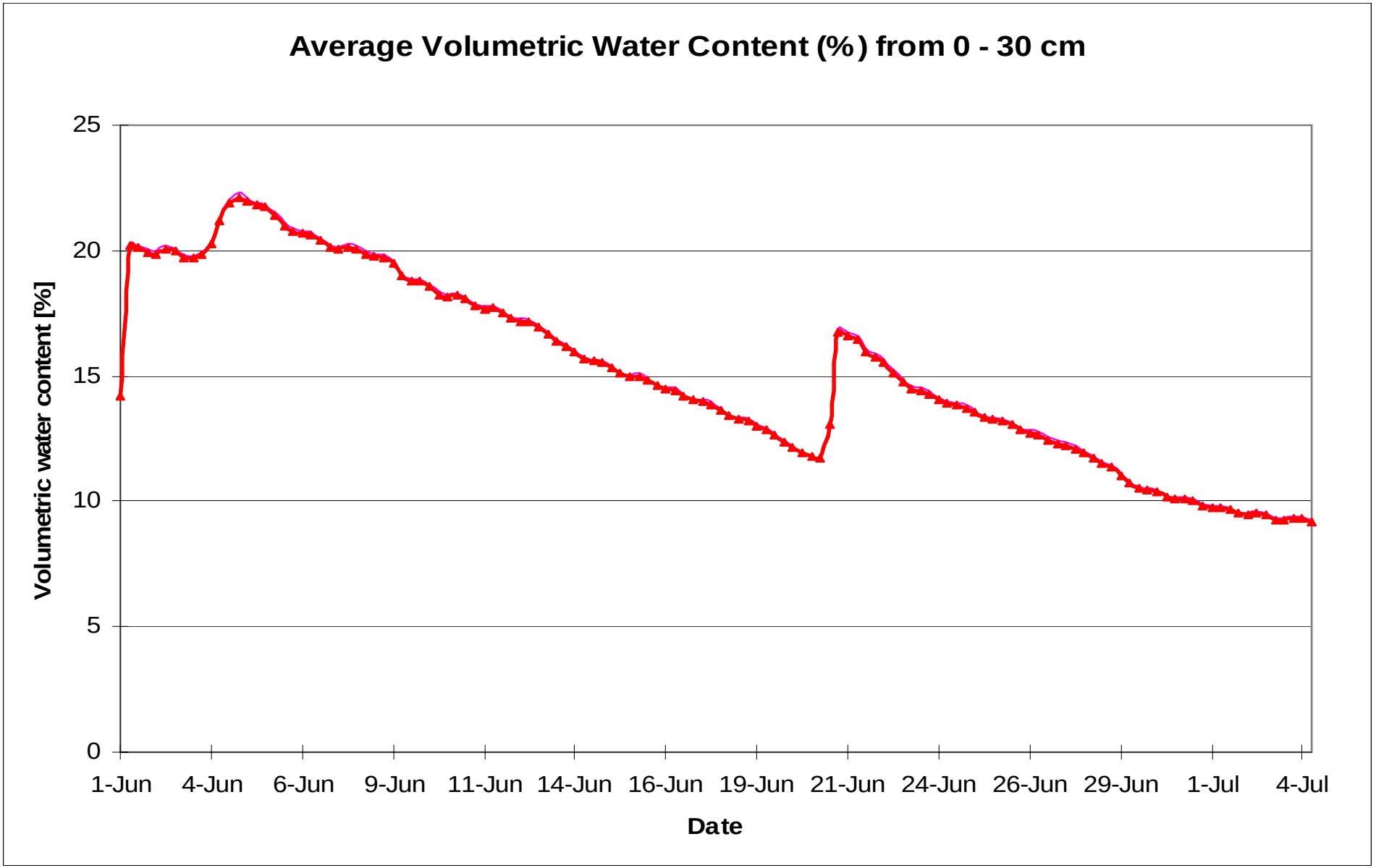
Samples taken at John Fedorkow's site, at the 4 Benchmarks to identify spatial variability in soil (BM1…4). GS1: 0-10 cm; GS2: 10-30 cm

FieldScout TDR Readings

Main Equipment (ME) and Benchmarks (BM1…4) at John Fedorkow's



Campbell Reflectometers at J. Fedorkow's, NOTL

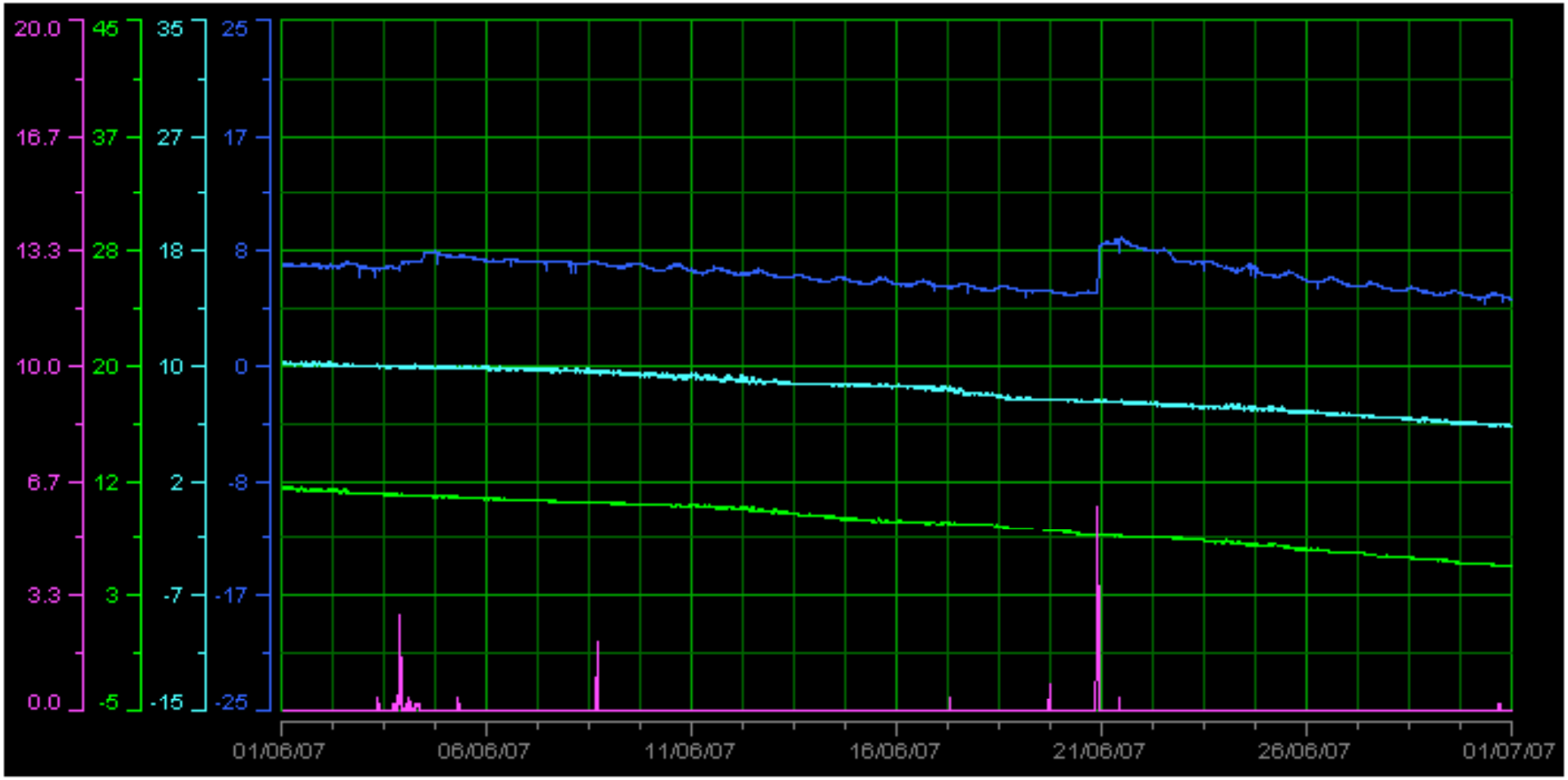


/WIN 2007/Niagara/COWSEP/C-Probe

C Probe Data – June 2007

Equipment provided by WIN

1-Jun-2007

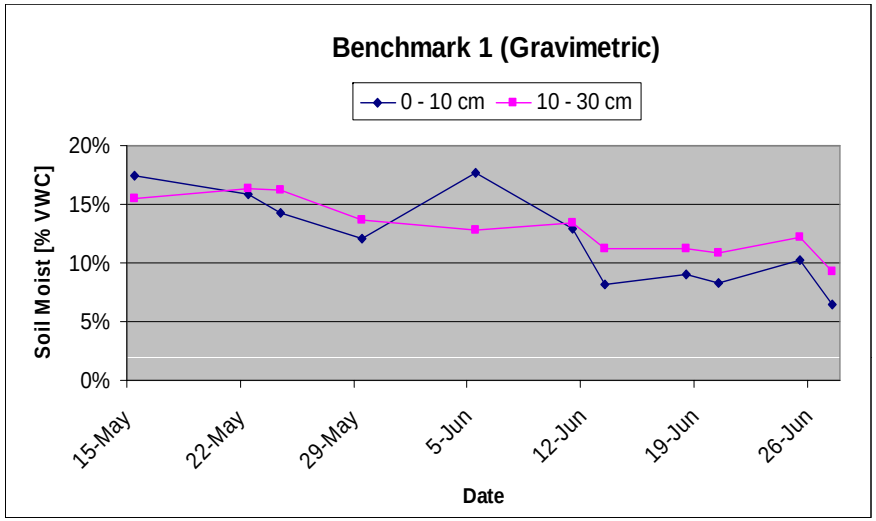


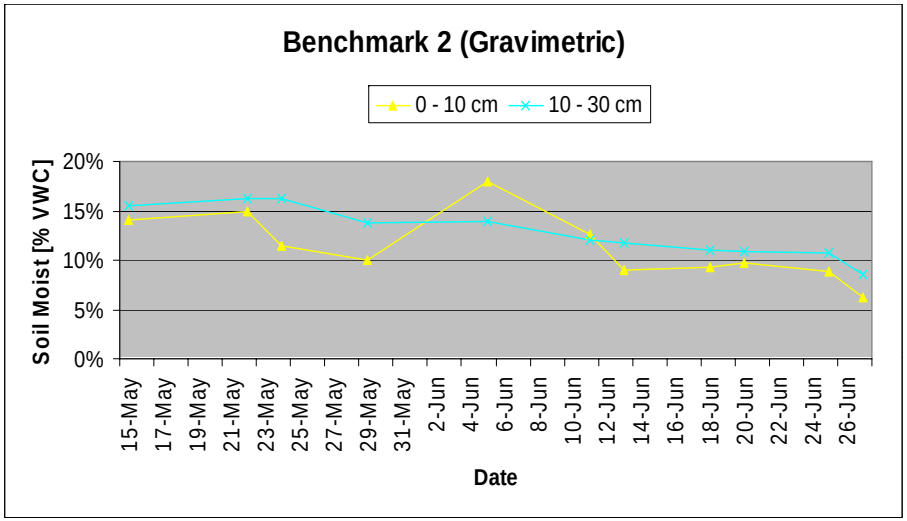
Legend:

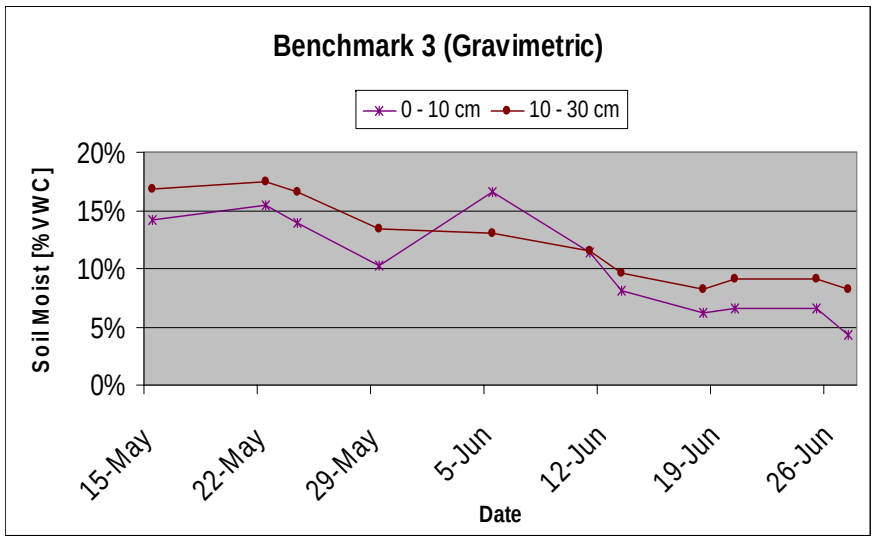
Color	Name	Last Value
	/WIN 2007/Niagara/COWSEP/Soil Moisture/C-Probe 10cm (11093 NOTL Peaches) (vol%)	6 vol% at 6-Jul-2007 9:29:34 AM
	/WIN 2007/Niagara/COWSEP/Soil Moisture/C-Probe 30cm (11093 NOTL Peaches) (vol%)	5 vol% at 6-Jul-2007 9:29:34 AM
	/WIN 2007/Niagara/COWSEP/Soil Moisture/C-Probe 50cm (11093 NOTL Peaches) (vol%)	5 vol% at 6-Jul-2007 9:29:34 AM
	/WIN 2007/Niagara/COWSEP/11093 NOTL Peaches/Precipitation (mm)	0.0 mm at 6-Jul-2007 9:29:34 AM

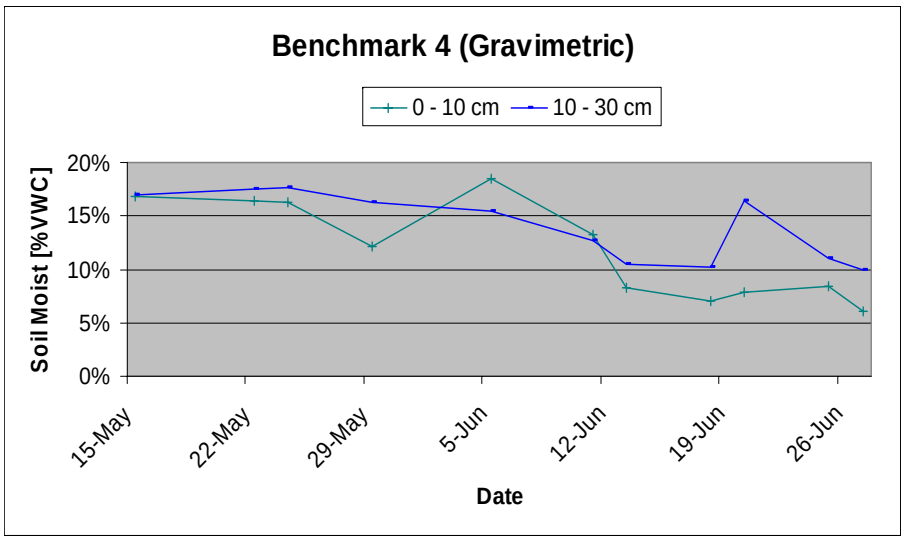

Satellite Sites
- Gravimetric Sampling
- TDR FieldScout

Satellite 1 (Gravimetric)

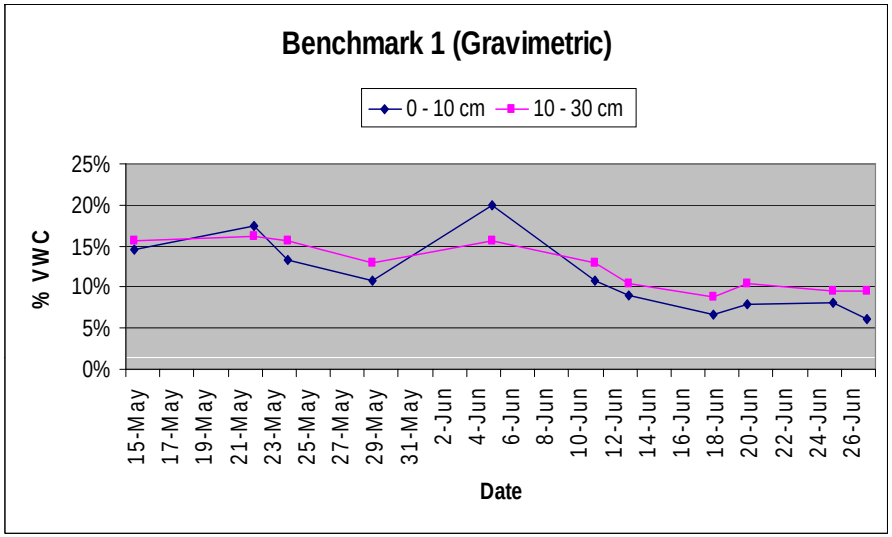


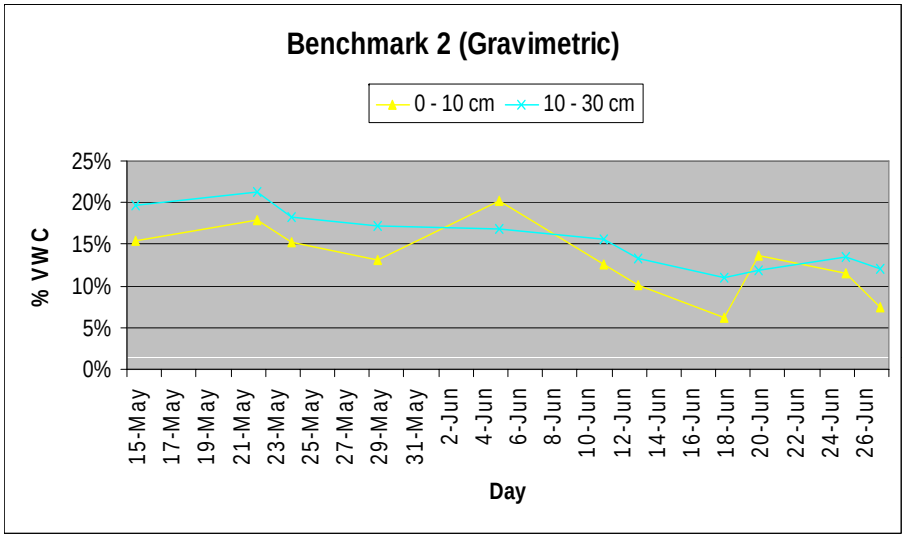


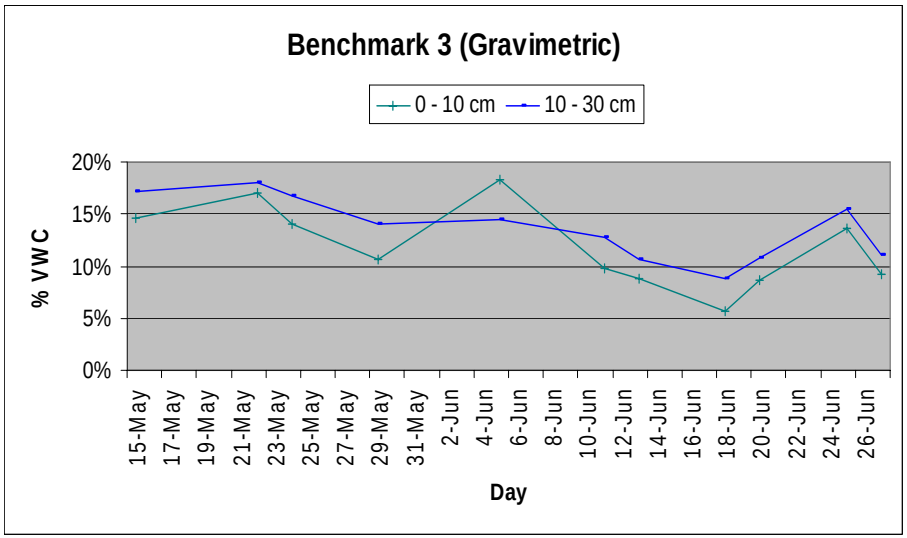


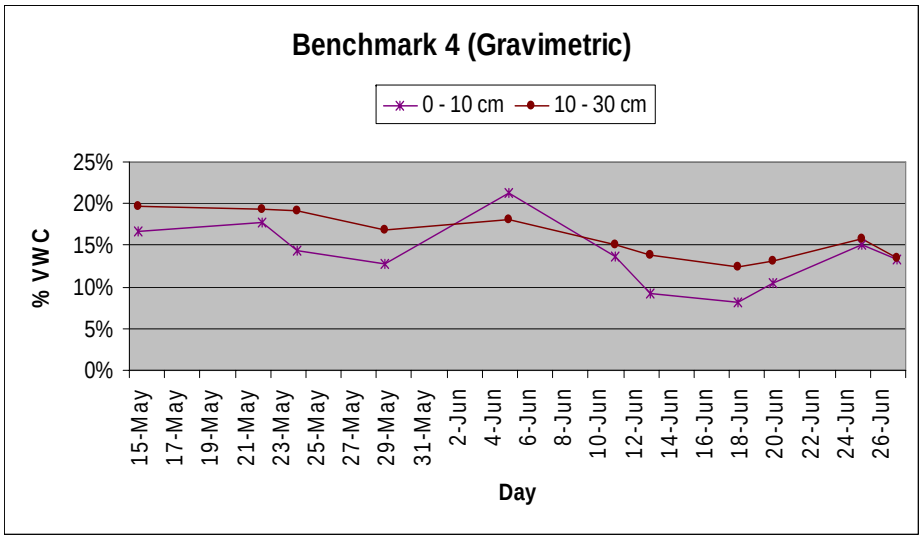


Satellite 2 (Gravimetric)

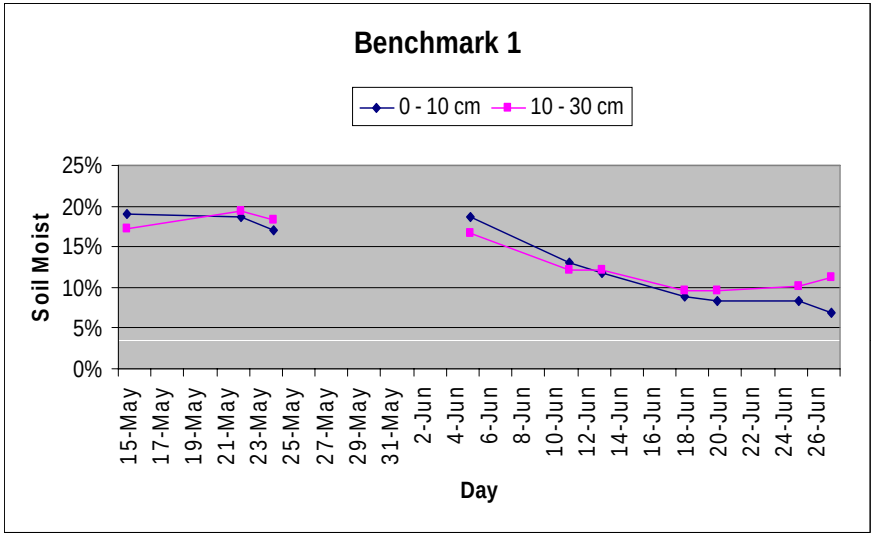


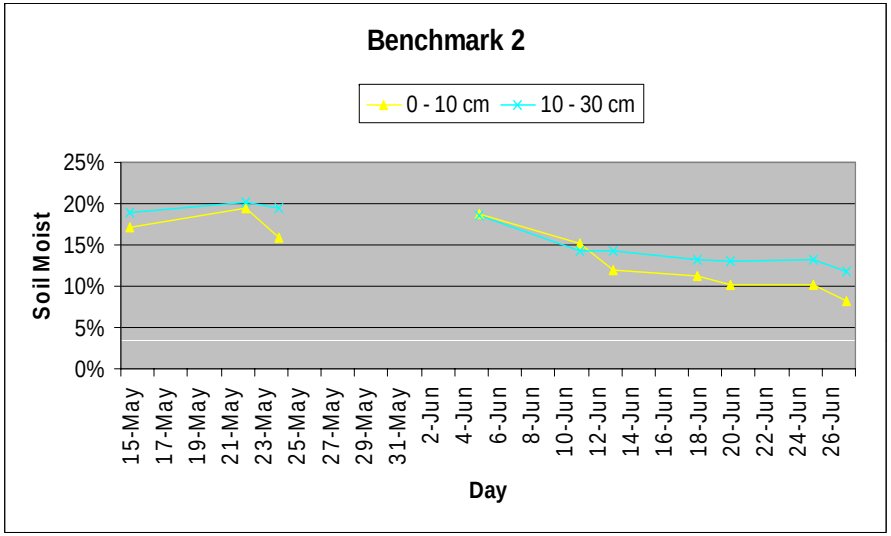


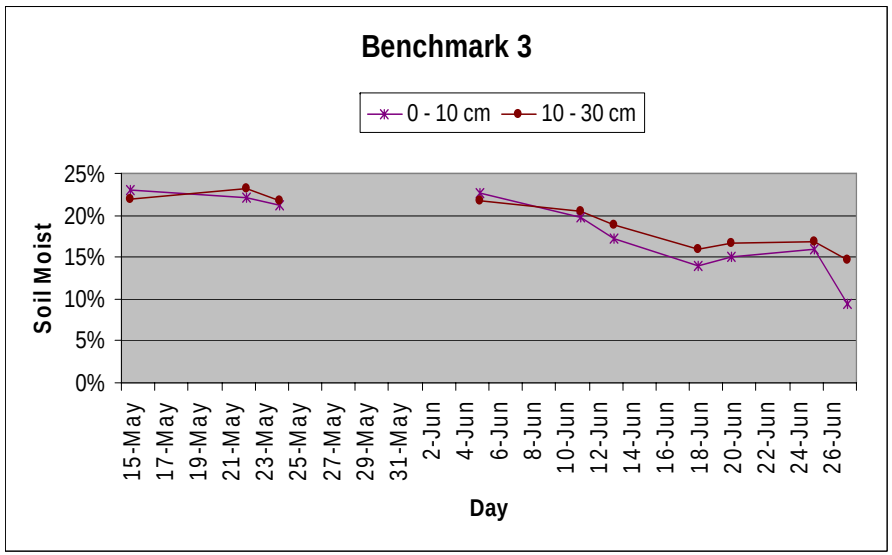


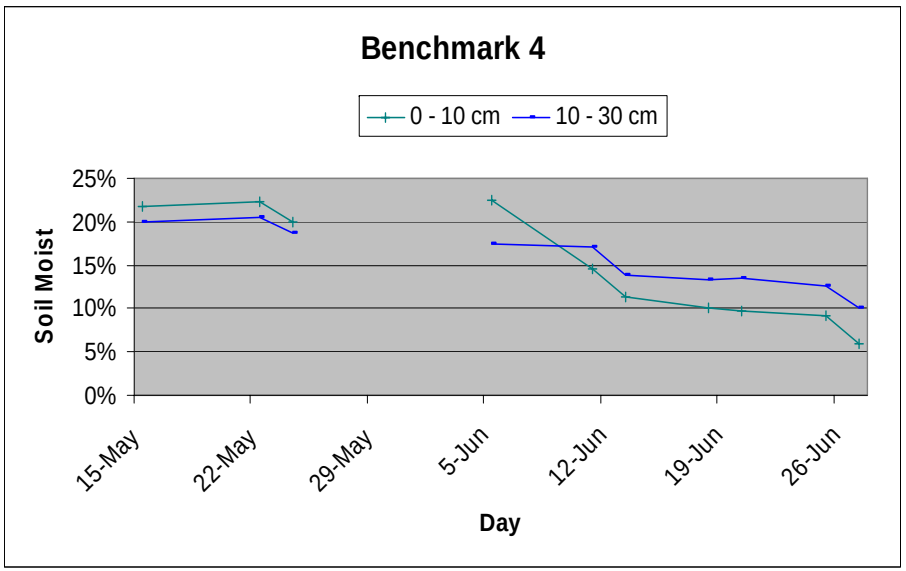


Satellite 3 (Gravimetric)

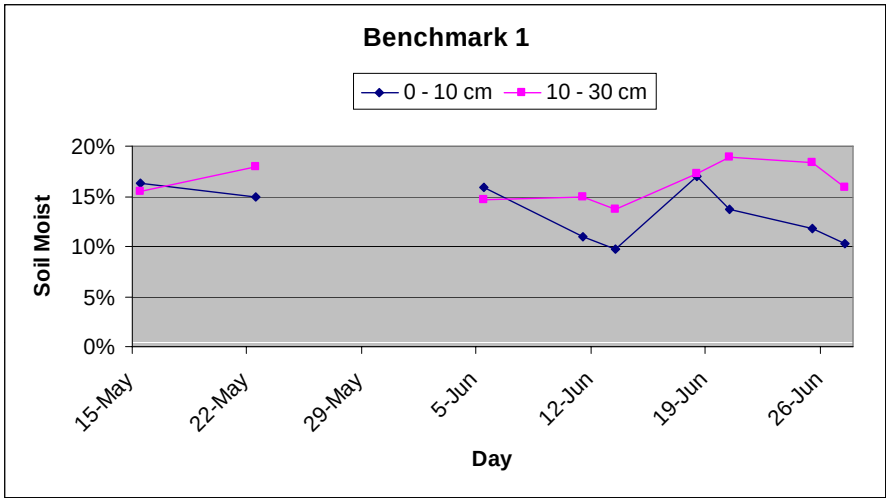


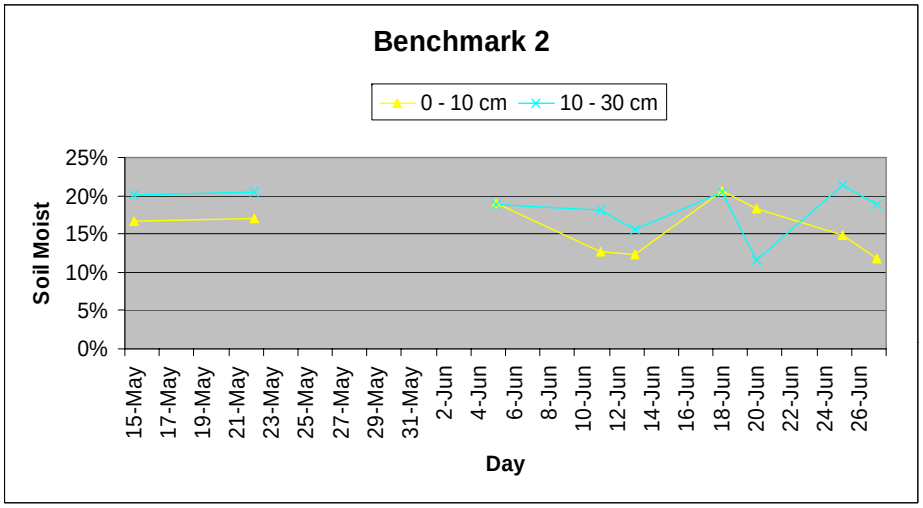


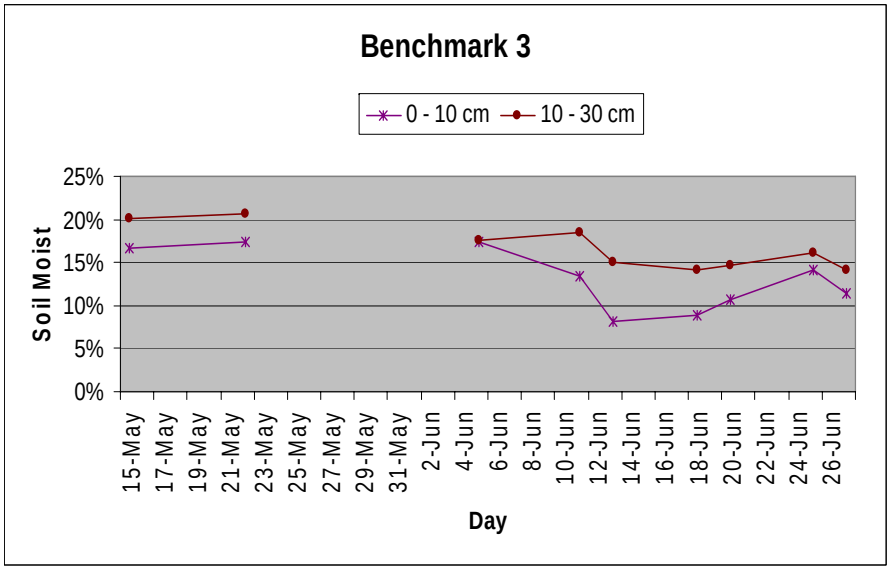


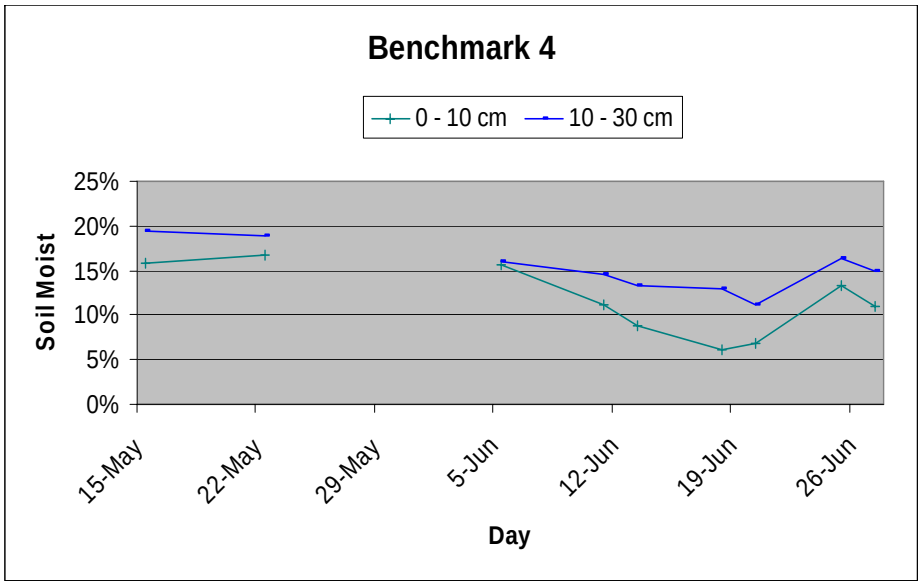


Satellite 4 (Gravimetric)









Satellite 5 (Gravimetric)