ROYAL IRRIGATION DEPARTMENT
THAILAND

A Development on the Prototype of Soil Moisture Measurement for Alternative Wetting and Drying (AWD)

The Director of
Bureau of Research and Development




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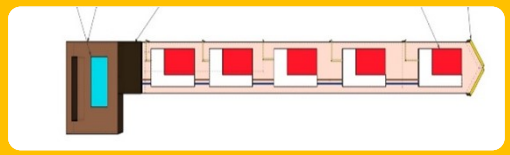
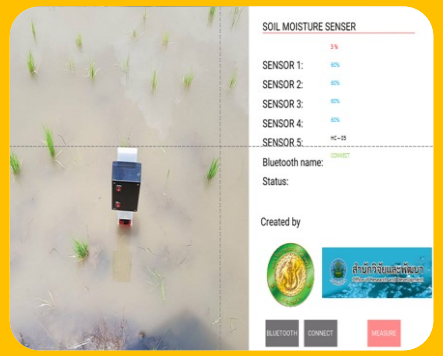
1 Problem Statement

Economic Crop (Paddy Field) Drought & Flood Innovation

To develop the prototype of soil moisture measurement

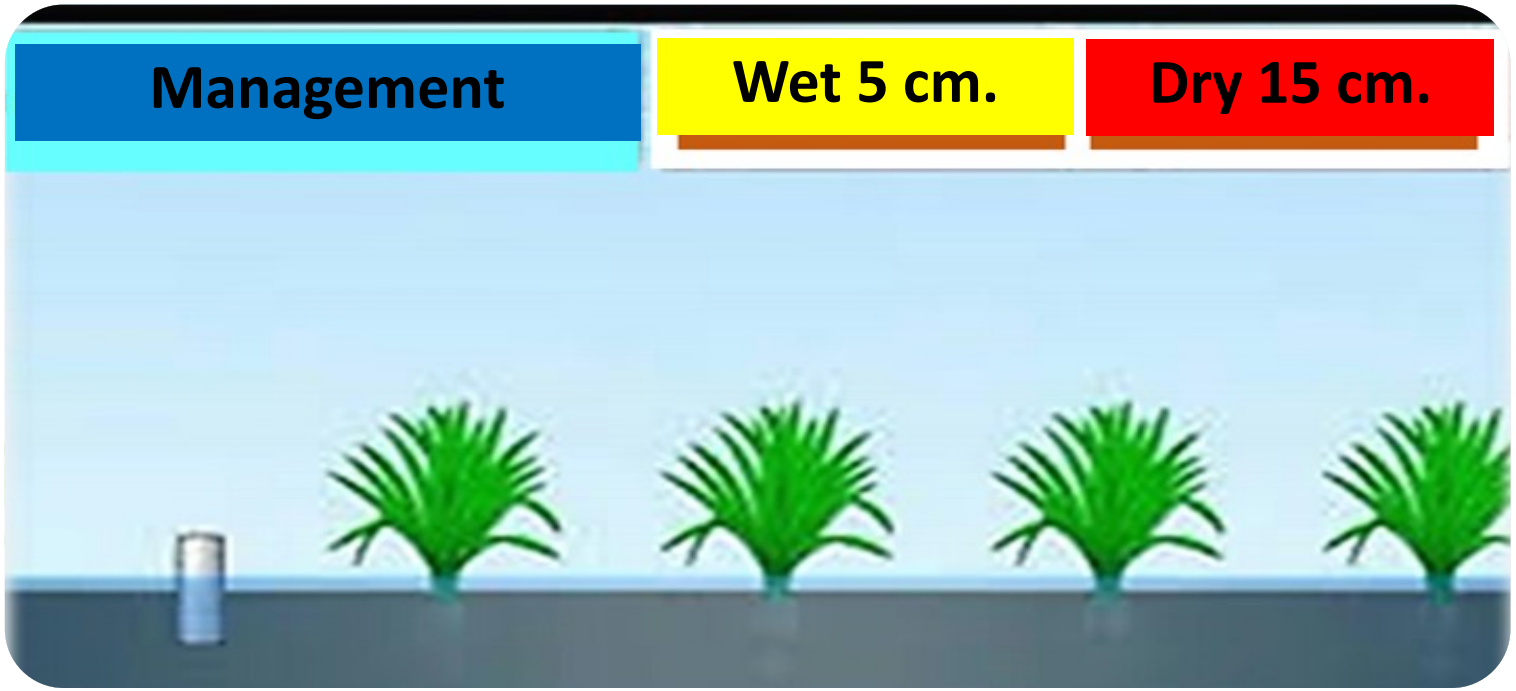
Prototype of Soil Moisture Measurement





2 Background & Reviews

Pattern of Wetting and Drying Cultivation



- ❑Growth
- ❑Crop Pattern
- ❑Management

2 Background & Reviews

- ❑Cropping Process
- ❑Water Demand
- ❑Management

Cropping Process




Crop Water Requirement = (Kc*ETo) + P - Re

2 Background & Reviews

Measurement of Soil Moisture Content Method

Direct Method
- Gravimetric Method

Weight of an empty container with lid = W_1
Weight of container with lid + wet soil = W_2
Weight of container with lid + dry soil = W_3
The calculations are as follows:
Weight of dry soil = $W_3 - W_1$
Weight of water in the soil = $W_2 - W_3$

$$\text{Water content, } w = \frac{\text{Wt of water}}{\text{Wt of dry soil}} \times 100\%$$

$$\therefore \quad w = \frac{(W_2 - W_3)}{(W_3 - W_1)} \times 100\%$$

Indirect Method
- Electrical Resistance Method
- Heat Diffusion Method
- Absorb Method –Tensiometric
- Penetration Method
- Radioactive Method

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3 Scope of Works

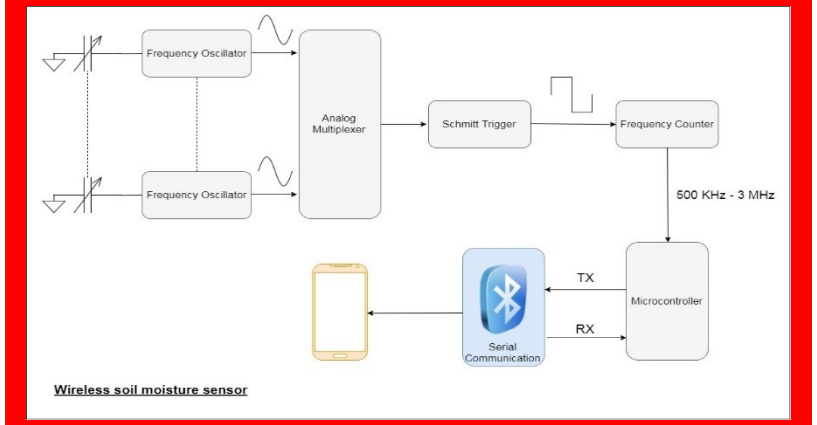
Prototype Soil Moisture

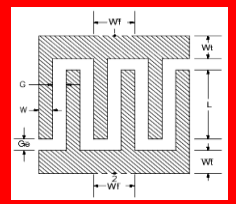
Hardware

Software

Hardware

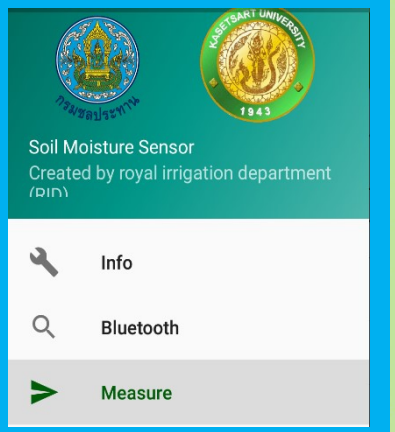
Circuit



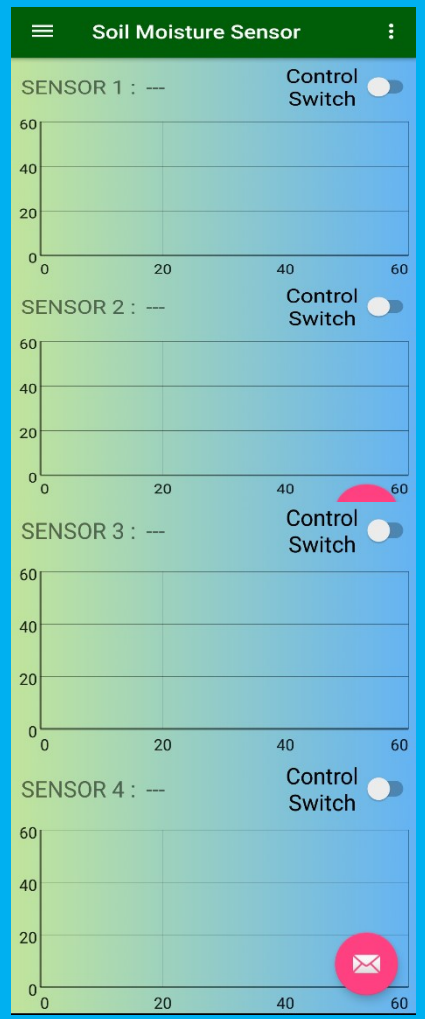


Software

Programming



Program Processing Android smartphone



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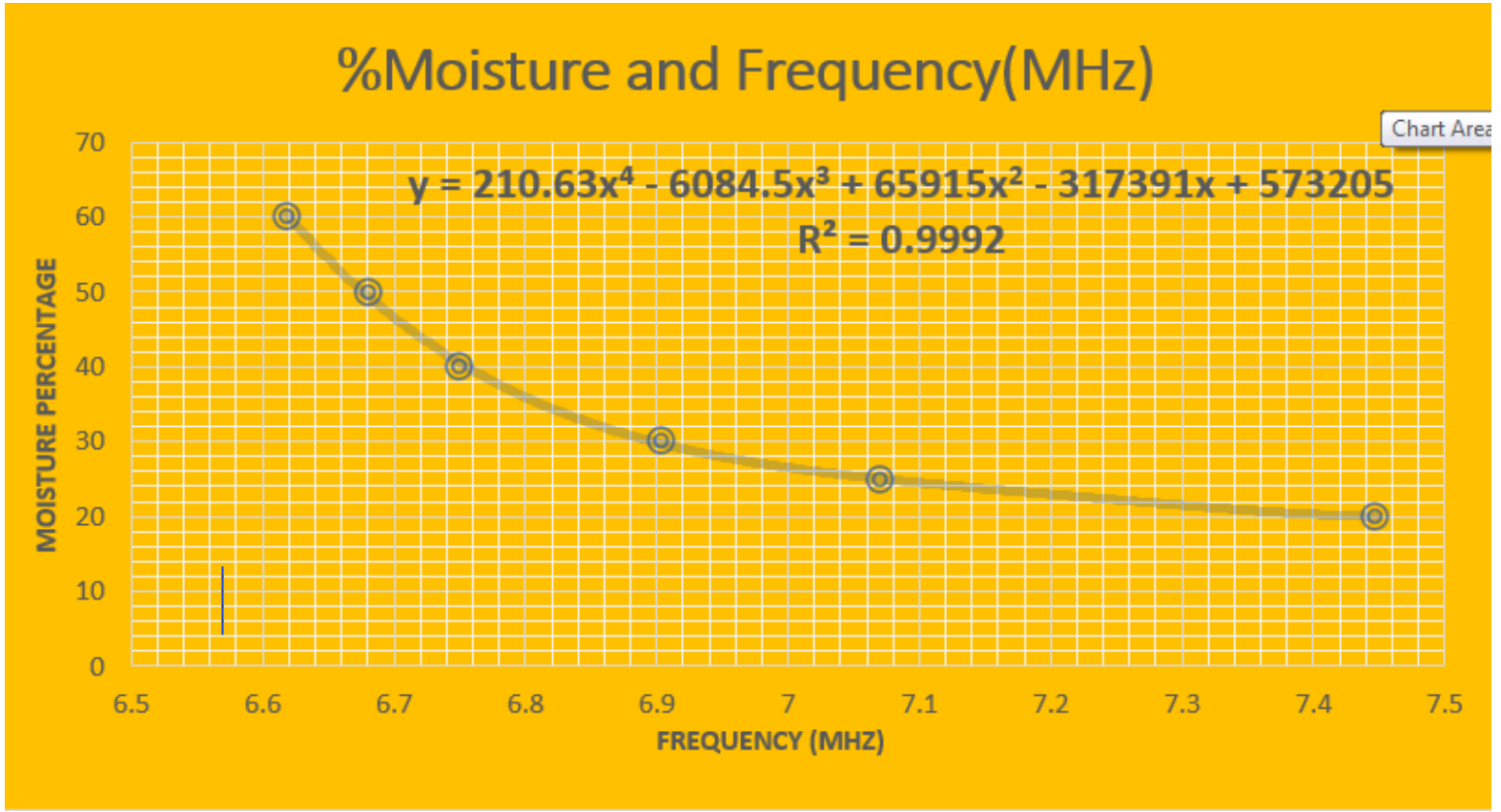
3 Scope of Works

Calibration Curve



3 Scope of Works

Setting the field

- **IDI Station**
- **Paddy Field**

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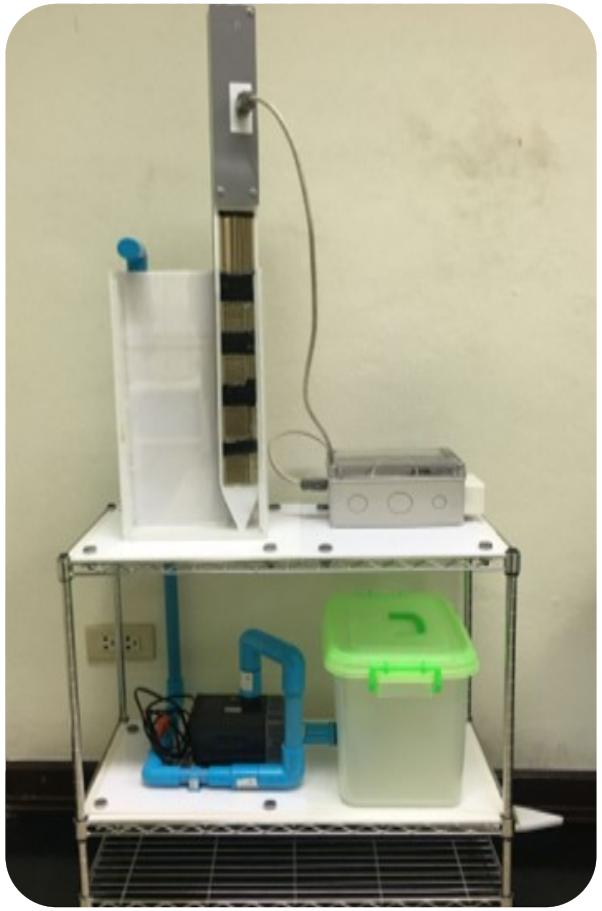
4 Output

Results

- **Prototype of Soil Moisture Measurement**
- **Able to measure o.5m depth**
- **Application on Android System**
- **Bluetooth Connection**



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5 Activities & Impacts

KASET FAIR 2018 (26 Jan. – 3 Feb. 2018)

60th CHAO PHAYA DAM (7 Feb. – 8 Feb.2018)

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5 Activities & Impacts

Large Scale Farming
at Kamphaeng Phet Province (10 Feb. 2018)

6 More Information

QR CODE for More Information


Thank you
for your attention!


Thank you
for your attention!


Thank you
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RID
RID
All for water
And water for us all,
DROP BY DRR
RID
RID