FIG WORKING WEEK 2017
Helsinki Finland
29 May - 2 June 2017

SOIL SCOUT

GAIN A DEEPER VIEW

Massively Reducing Irrigation through Permanent Wireless Below-Ground Monitoring

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Surveying the world of tomorrow -
From digitalisation to augmented reality

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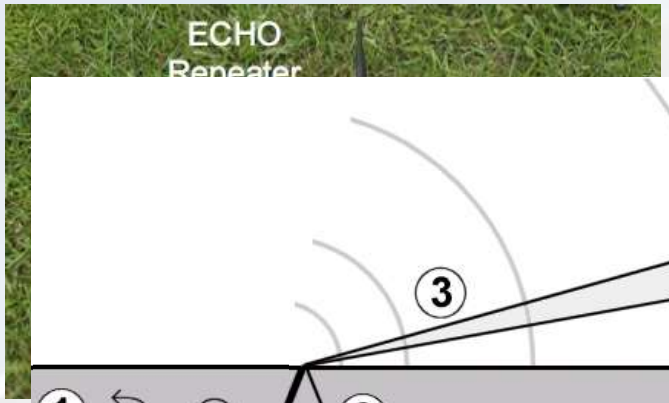
Soil Scout solution elements

Soil Scout solution elements



Precision Agriculture

Photos Jussi Sirkiä 2011

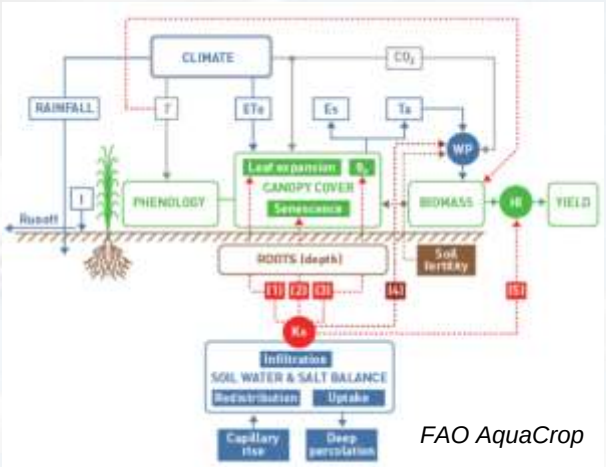
Precision Agriculture

1. Measure yield during harvest
2. Identify cause(s) of poor growth
3. Remove growth restictors
4. Manage inputs spatially

→ Variable Rate Irrigation

Irrigation Control Approaches to Date

1. Timers On/Off
2. Evapotranspiration Models
3. Soil Sensors



FAO AquaCrop

Soil Scout Water Saving Irrigation Approach

SOIL SCOUT

Location: 60.357436 , 24.379941

Devices | Notifications | Notification rules | Groups

View Device Map

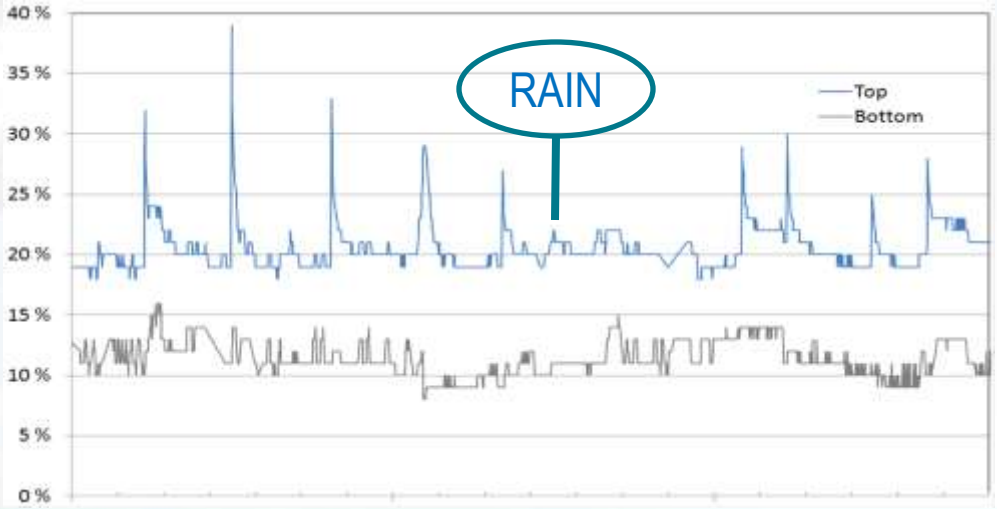
Devices

+Add new device

Name	Type	Status	Moisture (vol)	Temperature	ID	Depth	Action
K1 10cm	Scout	OK	32% ↘	16.0°C ↘	13897	10.00 cm	Edit
K1 30cm	Scout	OK	28% ↘	14.0°C ↘	13903	30.00 cm	Edit
K6 10cm	Scout	OK	26% ↘	17.0°C ↘	13906	10.00 cm	Edit
K6 20cm	Scout	OK	32% →	14.0°C ↘	13905	20.00 cm	Edit
K6 30cm	Scout	OK	32% →	13.5°C →	13904	30.00 cm	Edit
Phigh 15cm	Scout	OK	35% →	13.0°C ↘	13414	15.00 cm	Edit
Phigh 25cm	Scout	OK	35% ↘	11.5°C ↘	13412	25.00 cm	Edit
Phigh 5cm	Scout	OK	35% →	14.0°C ↗	13901	5.00 cm	Edit
Plow 15cm	Scout	OK	31% ↘	13.0°C ↘	13417	15.00 cm	Edit
Plow 25cm	Scout	OK	37% →	12.5°C ↘	13415	25.00 cm	Edit
Plow 5cm	Scout	OK	41% ↗	16.0°C ↗	13902	5.00 cm	Edit
Pstat 15cm	Scout	OK	34% →	13.5°C ↘	13411	15.00 cm	Edit
Pstat 25cm	Scout	OK	39% →	12.0°C ↘	13409	25.00 cm	Edit
Pstat 5cm	Scout	OK	29% ↗	16.0°C ↗	13410	5.00 cm	Edit
	Base	OK			359227050412200		Edit
Repeater	Repeater	OK			57373		Edit

Soil Scout Water Saving Irrigation Approach

1. Distribute Soil Scout Hydra100 sensors according to remote sensing imagery
2. Choose installation depths in root zone and below it
3. Irrigate when root zone moisture declines below threshold
4. Adjust dosage to keep deep sensors dry



Conclusion

- Spatial and vertical soil profiling enables ”the other half” of Precision Agriculture
- Fully buried wireless sensors may achieve common acceptance
- Percise irrigation control presents a powerful case example of the potential

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