

# EO for optimising Crop production and Water management

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- Dutch SME
- Since 2000
- Satellite based data and services
- Agriculture and water
- Commercial and Public clients









- Land productivity [kg/ha]
- Water productivity [kg/m<sup>3</sup>]









### PiMapping<sup>®</sup> Technology



### **Global Experience**





### EXAMPLE 1: SUSTAINABILITY - EO4SD









AIM: To achieve progressive uptake of satellite based environmental information in the planning and implementation of the development projects, programmes and activities of the Multilateral Development Banks (MDBs) and their respective Client States.

Major themes for the Agriculture and Rural Development cluster:

- Increasing agricultural productivity
- Improve agricultural water management
- Foster sustainable land management







### Pilot Areas





### Agricultural monitoring (Uganda)

Implementing agencies  $\rightarrow$ 

- Set the baseline
- Monitor productivity changes
- Evaluate impact of interventions

Stakeholders  $\rightarrow$ 

• Improve smallholders understanding of climate resilient production



0 500 1000 1500 2000 2500 3000 [kg/ha]

Actual evapotranspiration



0 10 20 30 40 50 60 [mm]





### EXAMPLE 2: WAPOR DATABASE



### WaPOR - Water Productivity open access portal



Food and Agriculture Organization of the United Nations



#### +10 satellite based data components at 250m, 100m and 30m resolution, from 2009







UNIVERSITY OF TWENTE.



#### **Timeseries Actual Evapotranspiration 2016**

#### (Last 10 days of each month)



0.1 mm/day 2.5 mm/day 5.0 mm/day 7.5 mm/day 10 mm/day







#### Values per Pixel







### **Change Detection**

#### East Oweinat (South Egypt)





#### Biomass production (kg/ha/year)





Biomass production trends 2010-2016 (kg/ha/year)









# EXAMPLE 3: SUGARCANE SOLUTIONS FOR COMMERCIAL FARMS





# **Sugarcane Solutions**

#### **Performance Monitoring**



18 Nov 2014

04 Dec 2014

6.4

4.0 3.2 Y 2.4 - 1.6 - 0.8





# **Sugarcane Solutions**

#### Variable Rate Fertilizer Application







## **Sugarcane Solutions**

#### **Yield Estimates**







### **FIELDLOOK**







- eLEAF's crop monitoring platform
- Currently operational in South Africa, Russia, Ukraine and used in many projects
- Individual accounts with weekly data per field on:
  - Crop performance (Actual Biomass production (BIOact) in kg/ha/week, NDVI, Leaf Area Index)
  - Moisture (Actual ET, ET deficit in mm/week)
  - Minerals (Nitrogen content in kg/ha)





### Farm overview





# **Single Field Analysis**



Show 10 v entries Search:									
Field	<ul> <li>Period 11</li> </ul>	Period 12 🔹	Period 13 🔹	Period 14 🗘	Period 15 🔹	Period 16 🔹	Period 17 🔹	Period 18 🗘	Period 19 🗘
Actual ET (mm/week)									
Biomass production (kg/ha)									14 15 16 16 16 16 16 16 16 16 16 16 16 16 16



# gle Field Analysis



Spatial view

Field

1,4



## **Comparative analysis**







# Use Case: FruitLook

#### Western Cape - South Africa



- Weekly updates on performance and water use
- Automated alert system in case of anomalies





grape/fruit sector

(export, livelihood)







#### What have you achieved using FruitLook



Almost half of FruitLook users save MORE than 10% water and 1 in 10 saves 30%





### IN CONCLUSION...





Inputs to solve the Energy balance:

- NDVI
- Surface albedo
- Land Surface Temperature



- Meteo data (temp, relative humidity, wind speed, air pressure)
- Rainfall
- Land cover ....(irrigated/rainfed)







#### Come see the FieldLook and WaPOR demos tomorrow



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