

Sensing Sugarcane from Space for data-driven farming

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« Agriculture : les solutions digitales sur le terrain »

- eLEAF
- PiMapping® technology
- Sugarcane solutions
- Value realization
- SUCAF CI
- Pilot project eLEAF / SUCAF
- Forthcoming services
- Remarks



« Agriculture : les solutions digitales sur le terrain »

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



PiMapping® Technology

eLEAF's PiMapping® technology is a toolbox of algorithms:

- Based on satellite imagery and meteo data
- Information on Water, Vegetation & Climate
- Quantative data in mm, kg/ha, °C, etc



Raw satellite data



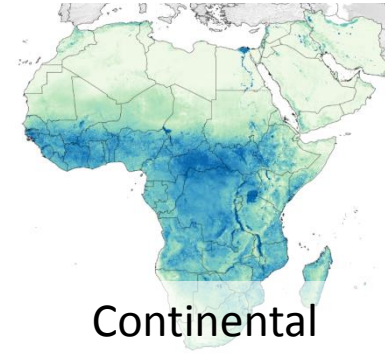
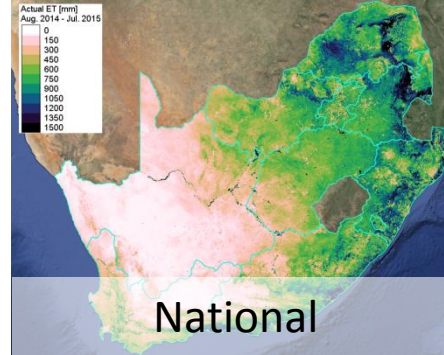
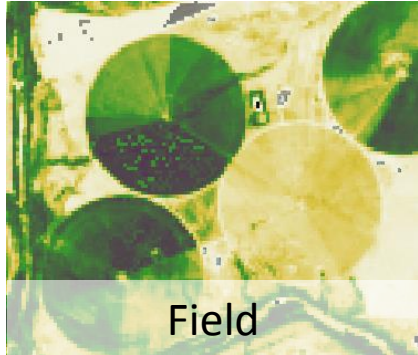
Smart pixels



PiMapping® Outputs

Plant Water Consumption

Evapotranspiration (ET) mm/ha/time step



For every Pixel
(approx 10-250m)

Plant Biomass Production

kg/ha/time step



Sugarcane solutions

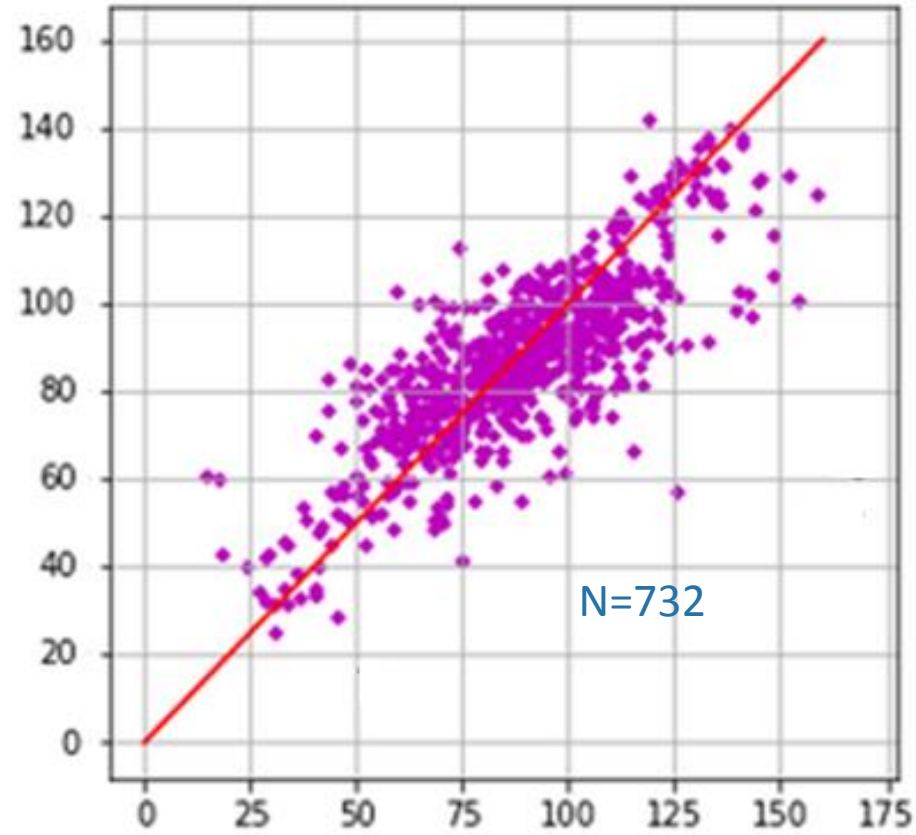
- Performance monitoring
- Cohort / Ratoon tracking
- Variable Rate Fertilization
- Yield estimates



Value realization

Yield estimates ?

Estimated
(ton/ha)

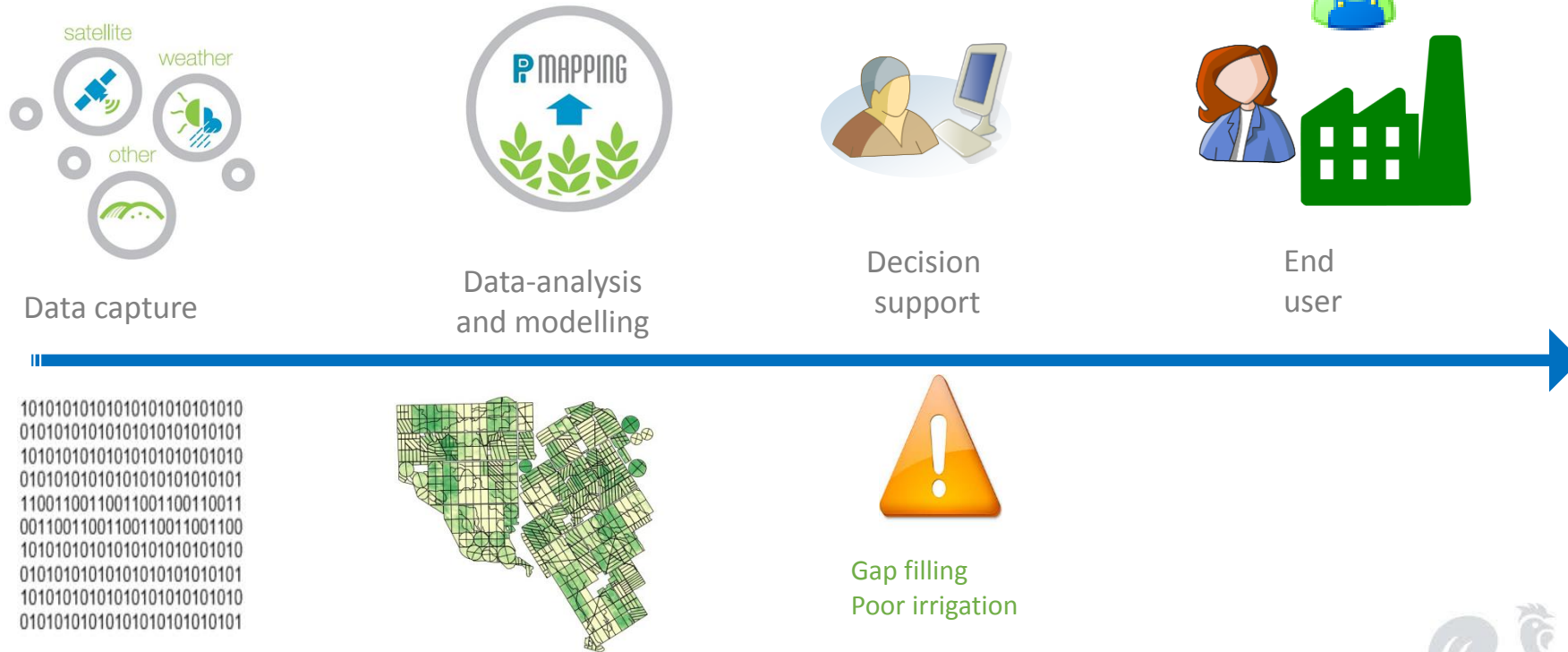


Measured
(ton/ha)



With every step in the information chain

- Reduce complexity
- Increase understanding
- Increase value (\$)



Value realization

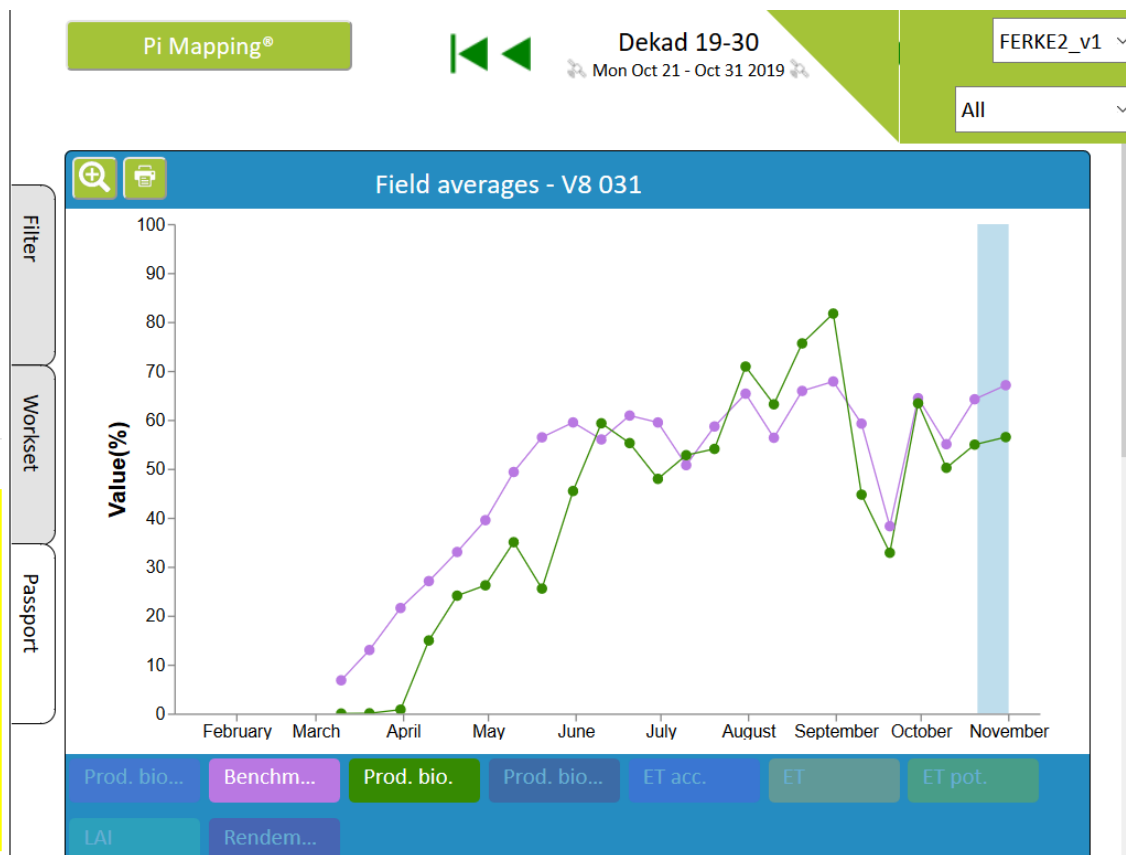
Integrate field information with satellite imagery

Coverage Information

Field name: V8 031
Farm: V8_FERKE2_v1
Season: 2019_21
Crop: Sugarcane
Variety: R579
Start growth: 28/02/2019
Cut date: 01/01/2030
Area: 80 ha

Values (21/10/2019 - 31/10/2019)

Accumulated biomass production (kg/ha/season)	41403.27
Accumulated evapotranspiration (mm/season)	838.65
Bio benchmark (kg/ha/dekade)	2682.48
Biomass production (kg/ha/dekade)	2258.33
Evapotranspiration (mm/dekade)	42.21
Leaf Area Index (-)	5.43
Potential biomass production (kg/ha/dekade)	2909.22
Potential evapotranspiration (mm/dekade)	54.46
Standing cane (ton/ha)	60.77



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Complexes Sucriers SUCAF-CI:

Ferké 1

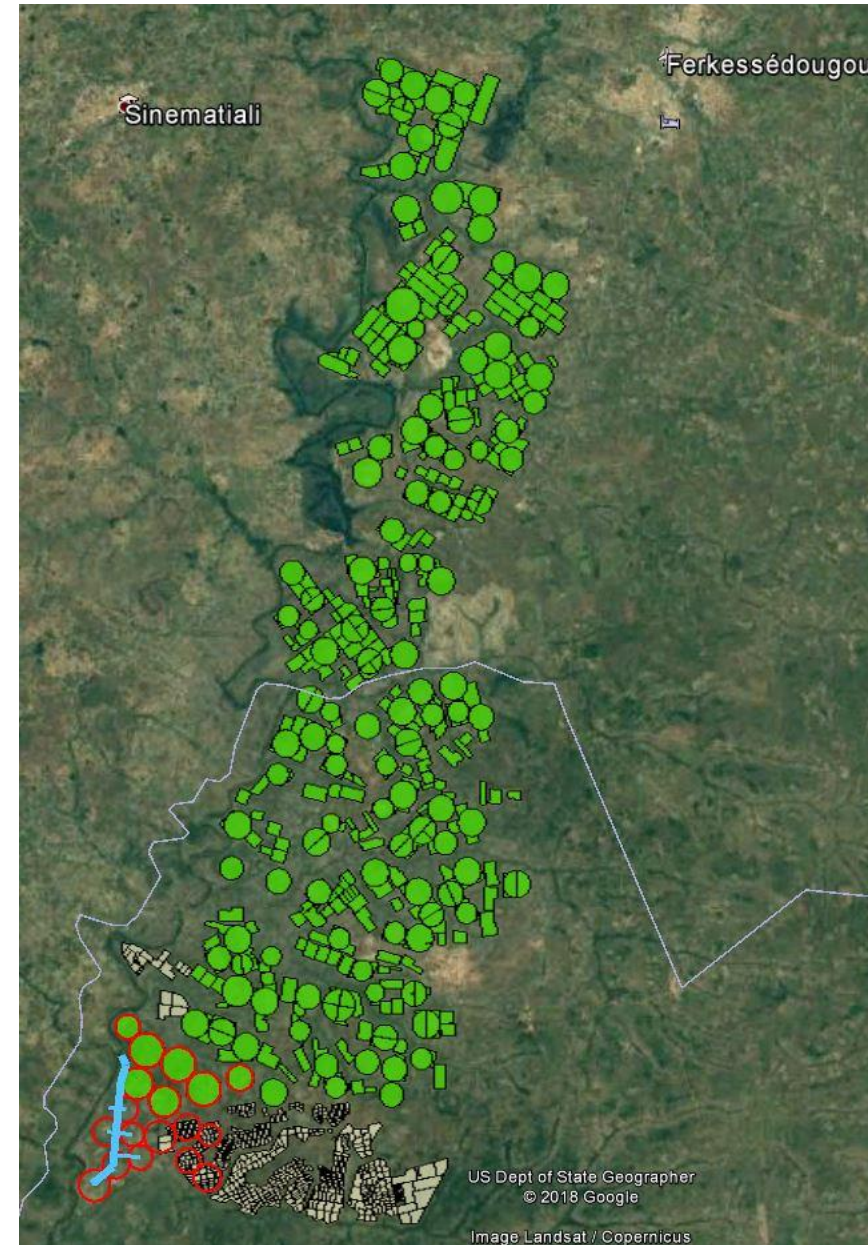
- Superficie Sous canne : 6 433 ha
- Superficie irriguée: 5 318 ha

Ferké 2

- Superficie Sous canne : 7 273 ha
- Superficie irriguée: 5 974 ha

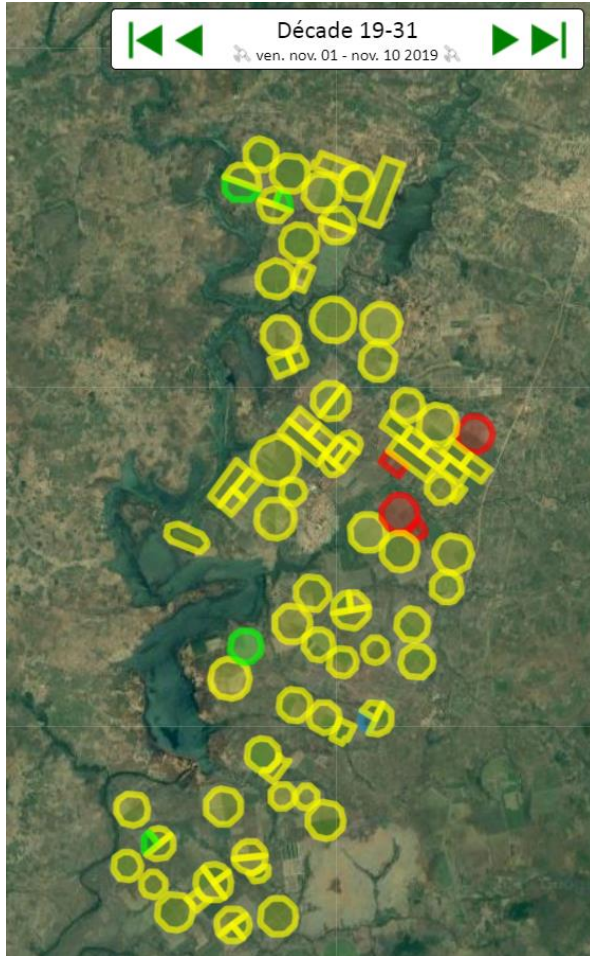
Total:

- Sous canne 13 706 ha
- dont irriguées : 12 407 ha

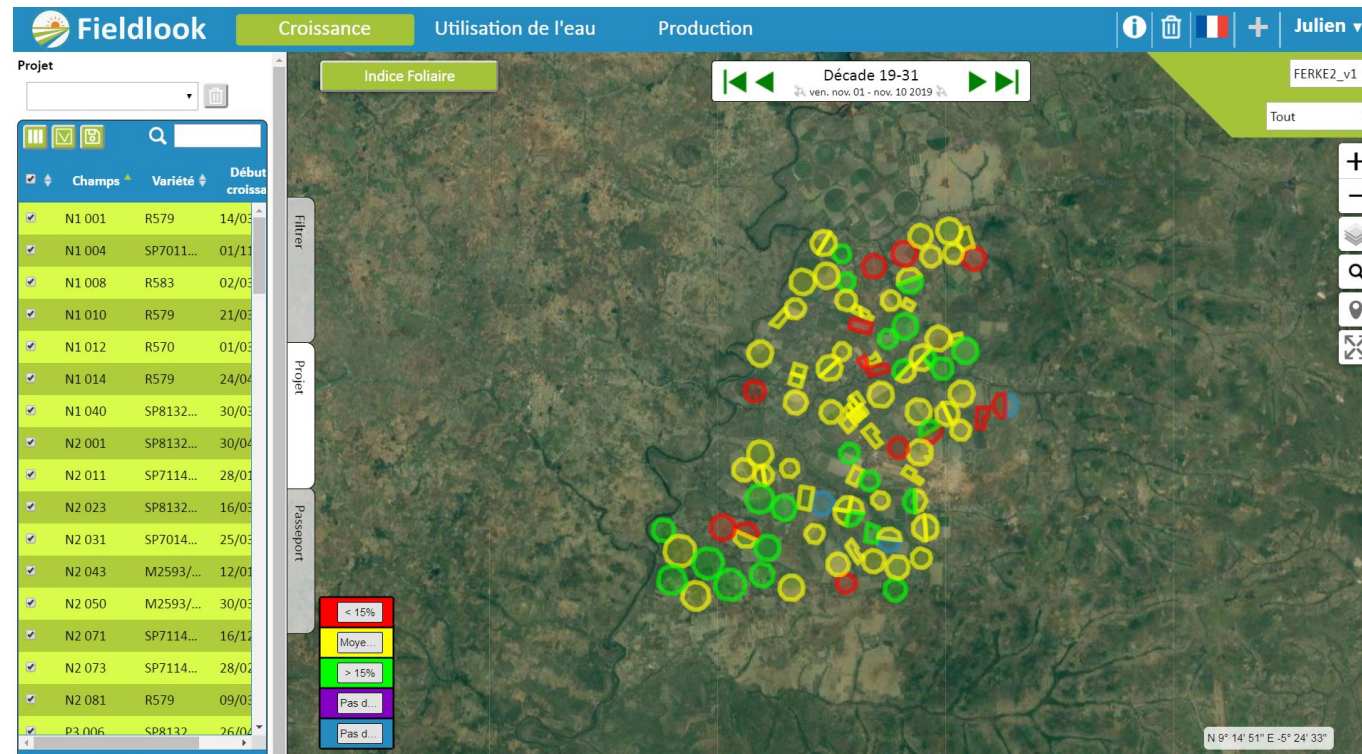


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Pilot Project

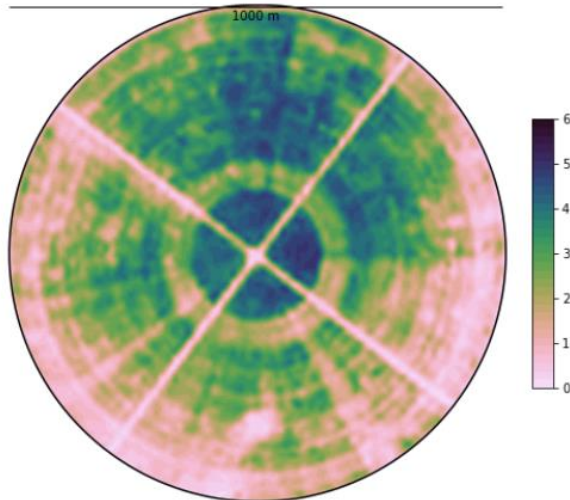


- Février 2019 pour 2 ans
- 10 000 ha de cannes
- Une visite sur site
- 6 sessions de travail/an sur des sujets prédéfinis



Pilot Project Croissance

Spatial view			
Field	L1 126	Field average	2.32
Data component	Leaf Area Index (-)	Min	0.10
Dekad	19-11 (2019-04-20)	Max	5.01
Cloud (%)	0	Deviation	1.19



- Indice Foliaire
- Production de biomasse (kg/ha/déc)

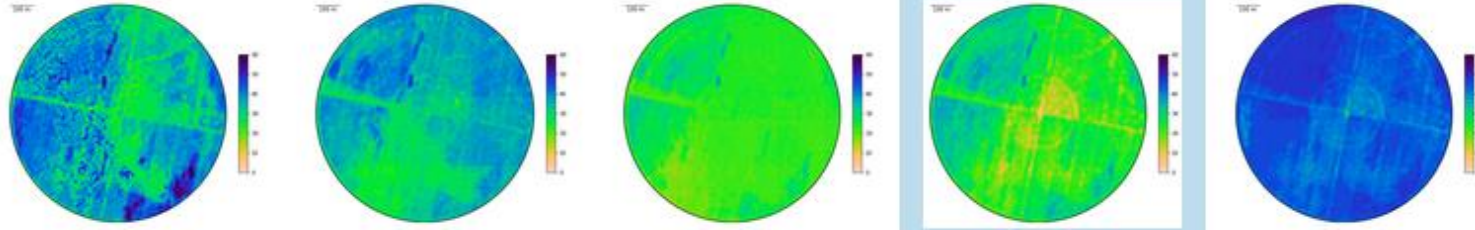
- Efficacité dans les visites de terrain
- Identifier des problèmes à distance



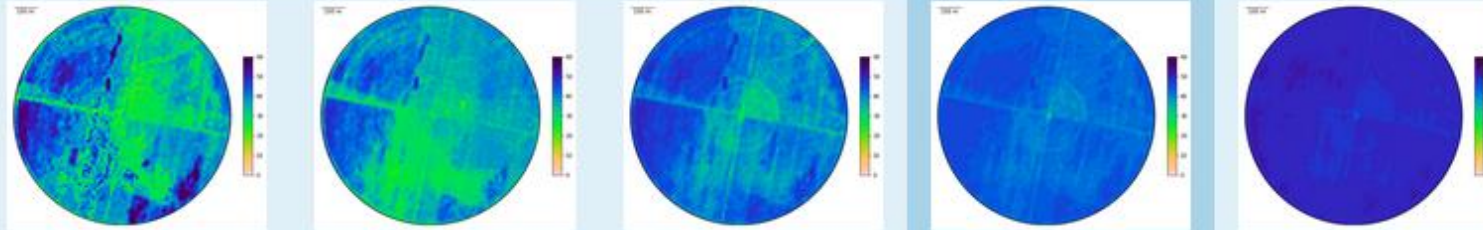
Pilot Project

Irrigation

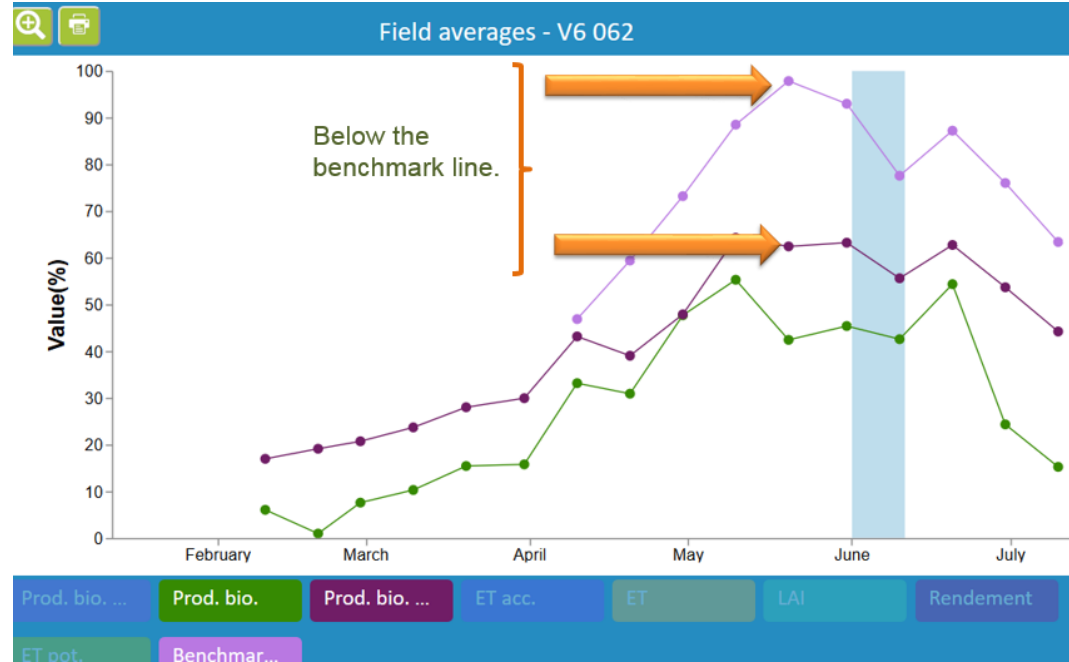
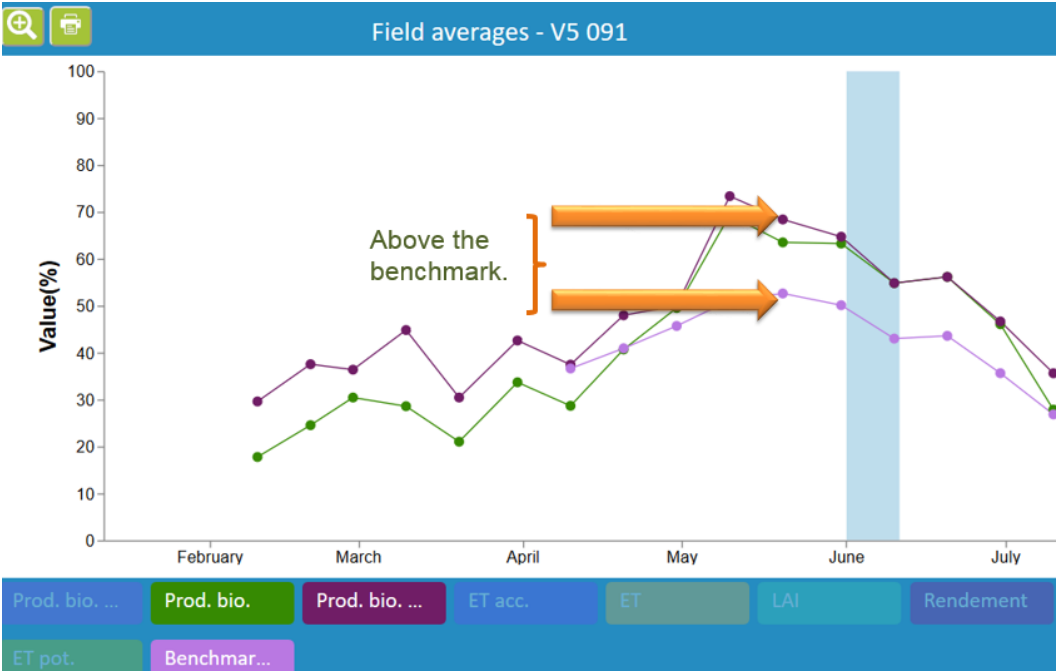
Evapotranspiration
(mm/decade)



Potential
evapotranspiration
(mm/decade)



Pilot Project Bio Benchmark



Pilot Project

Défis

- Importance de la base de données
- Outil puissant - Equipe dédiée qui utilise la plateforme
- Intégration de la plateforme dans nos pratiques
- Utiliser l'outil pour améliorer les rendements tonnage
- Mettre en place des stratégies pour une irrigation déficitaire

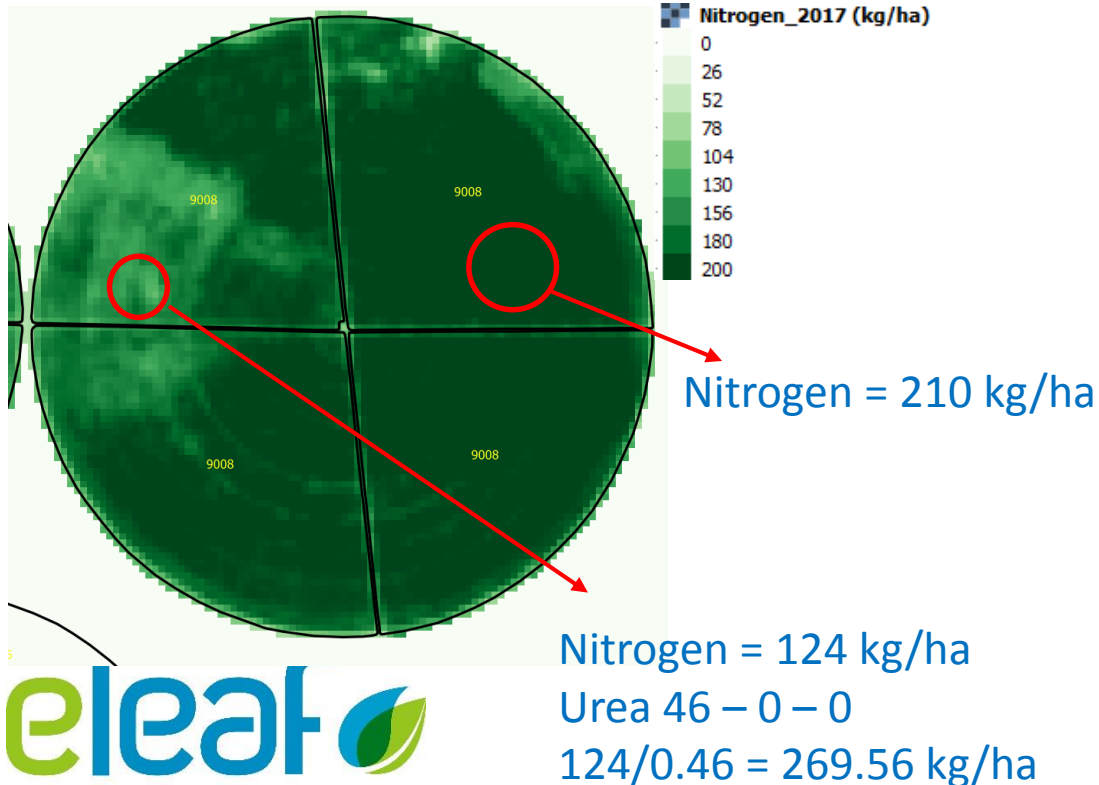


Forthcoming services

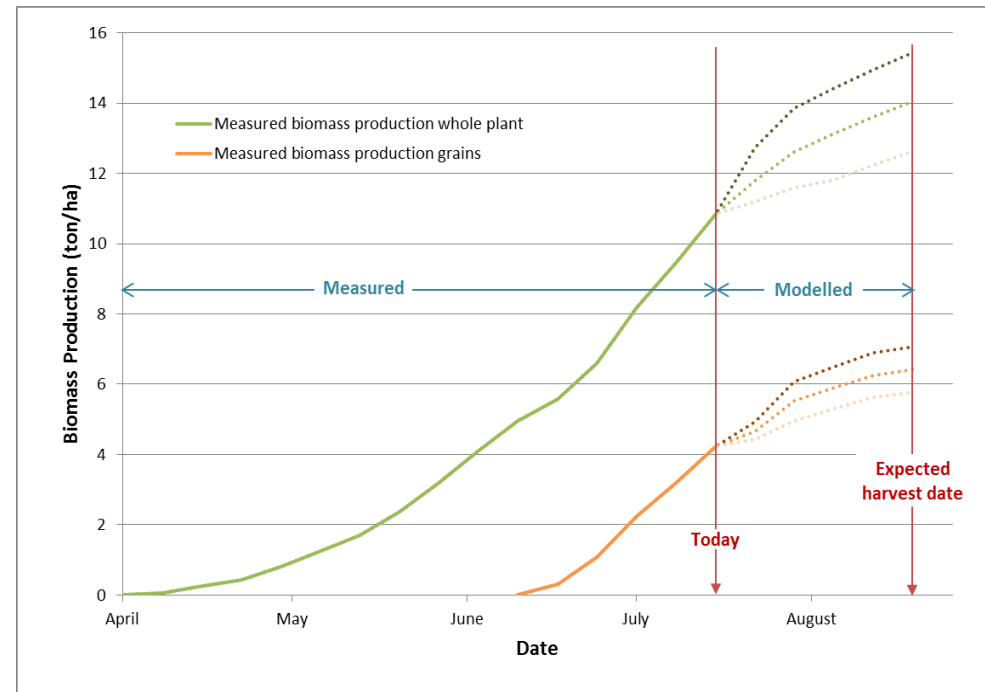


Optimizing mill revenue by improving harvest logistics and fertilizer management.

Fertilizer advice



Yield forecasting



Remarks

eLEAF provides data:

- Through time: daily/weekly/dekadal/monthly
- In space: in-field variability
- Quantitative metrics: kg – mm – °C

This data can be used for:

- Monitoring sugarcane in-field heterogeneity and crop establishment.
- Optimal response to agricultural practices and immediate insight in irrigation systems.
- Early insight in fresh cane production supporting logistics.

The collection of the data in the Fieldlook platform facilitates:

- Visualization of field/spatial information.
- Combination of field data with satellite imagery.
- Level of analysis and field information (graphs, maps and tables).
- Prioritized and better targeted field visits.



How can you benefit from eLEAF services?



Thank you

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