

Rendre compte des pratiques réelles grâce à l'agriculture de précision : zoom sur la remontée automatique et l'intégration des données

François Thierart, MyEasyFarm

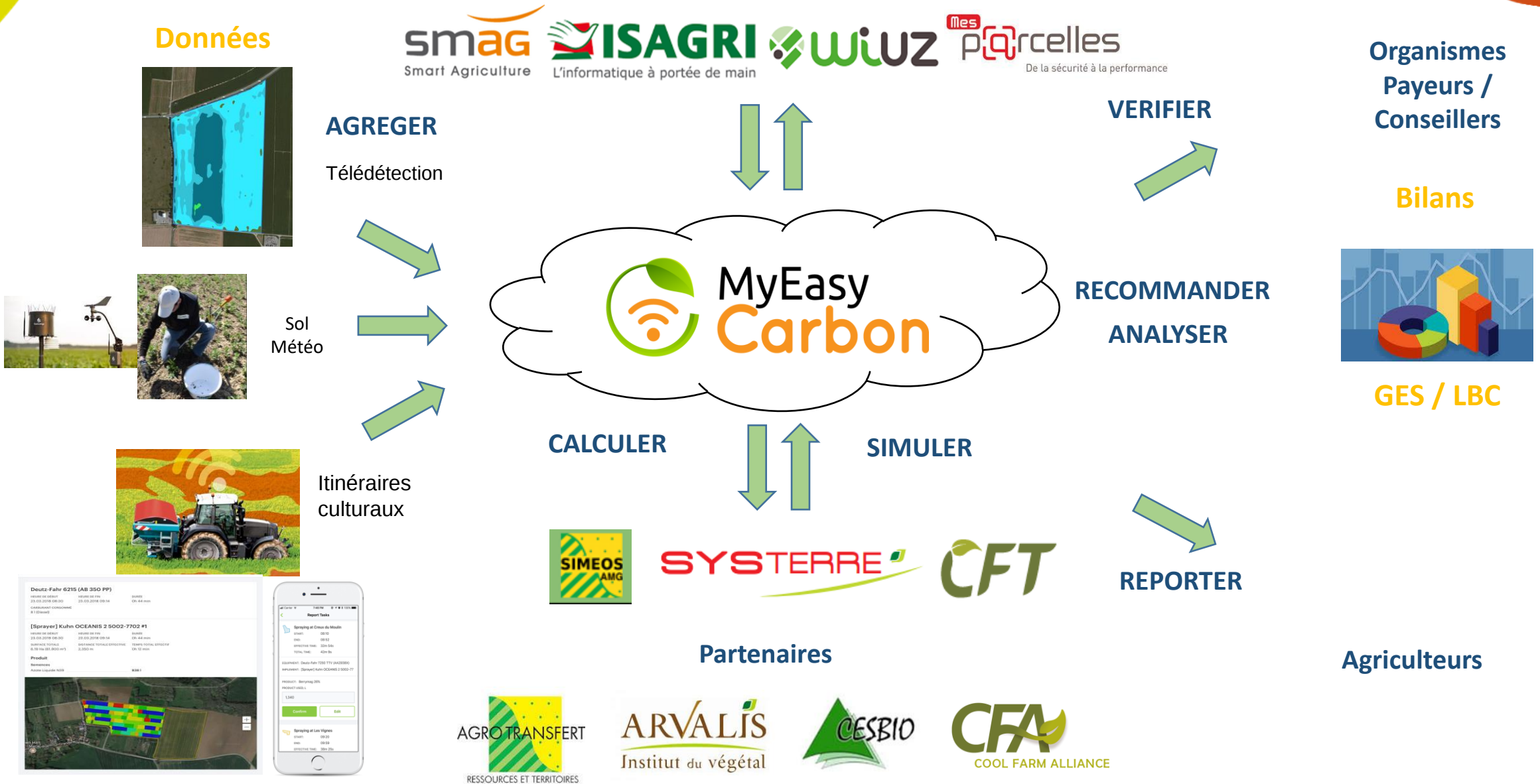


Cahier des charges

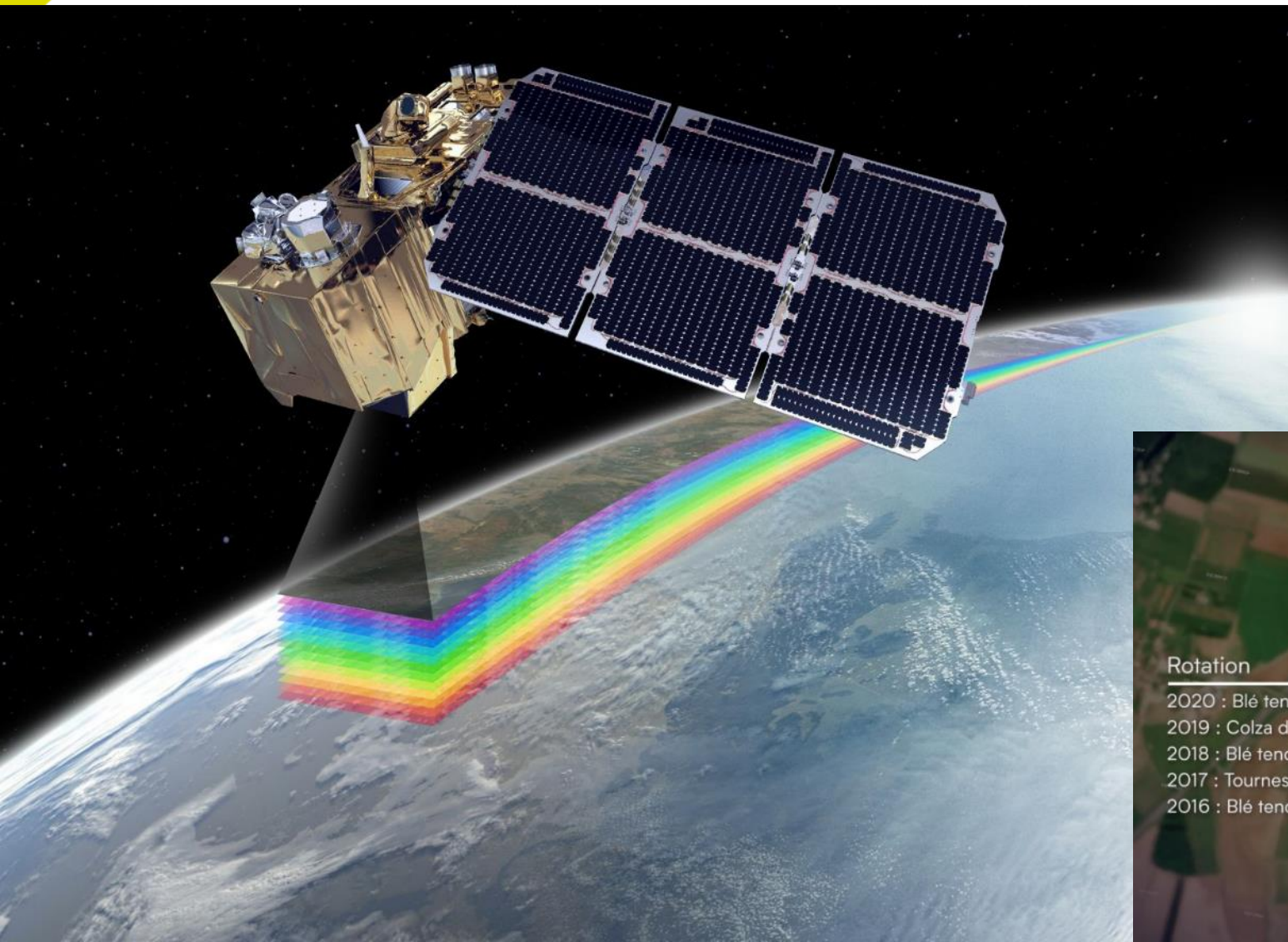
Outil de Carbon Farming

- Stockage de Carbone et émissions CO2
- Gestion des 3 étapes : Référence, Calcul et Suivi (MRV)
- Aide au Changement des pratiques Culturelles
- Simplicité
- Label Bas Carbone, mais aussi Filières
- Passage du «Déclaratif» au «Certifié Vérifiable»
- Centraliser et gérer des données numériques multi-sources
- Plateforme
 - Ouverte
 - Collaborative
 - Sécurisée

Calcul / Suivi du stockage C et des émissions CO₂



Données Télédétection



Données Sol



Select soil analysis



DATE		
02.10.2020		
SOIL TYPE		
Sandy soil		
ARGIE (G/KG)	CACO3 (G/KG)	PH
165	5	8.1
AZOTE TOTAL (G/KG)	C / N	CAILLOUS (%)
1.1	10	0
DENSITE APPARENTE	C ORGANIQUE (G/KG)	TENEUR MO (%)
1.4	11	enter 1.89 et 2.2

SOIL ANALYSIS
25 KB

CONFIRM

CANCEL

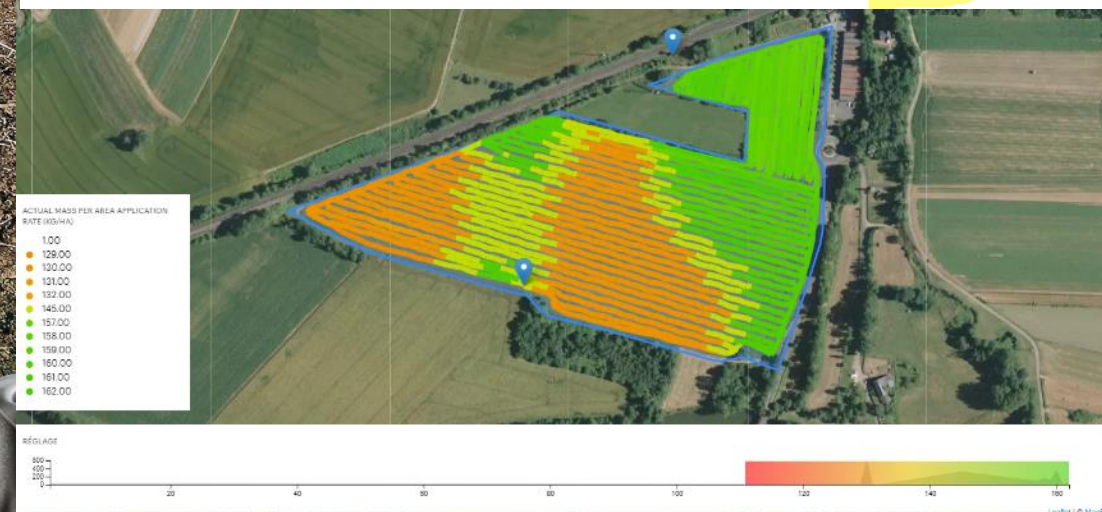


Données traçabilité des interventions par les matériels agricoles

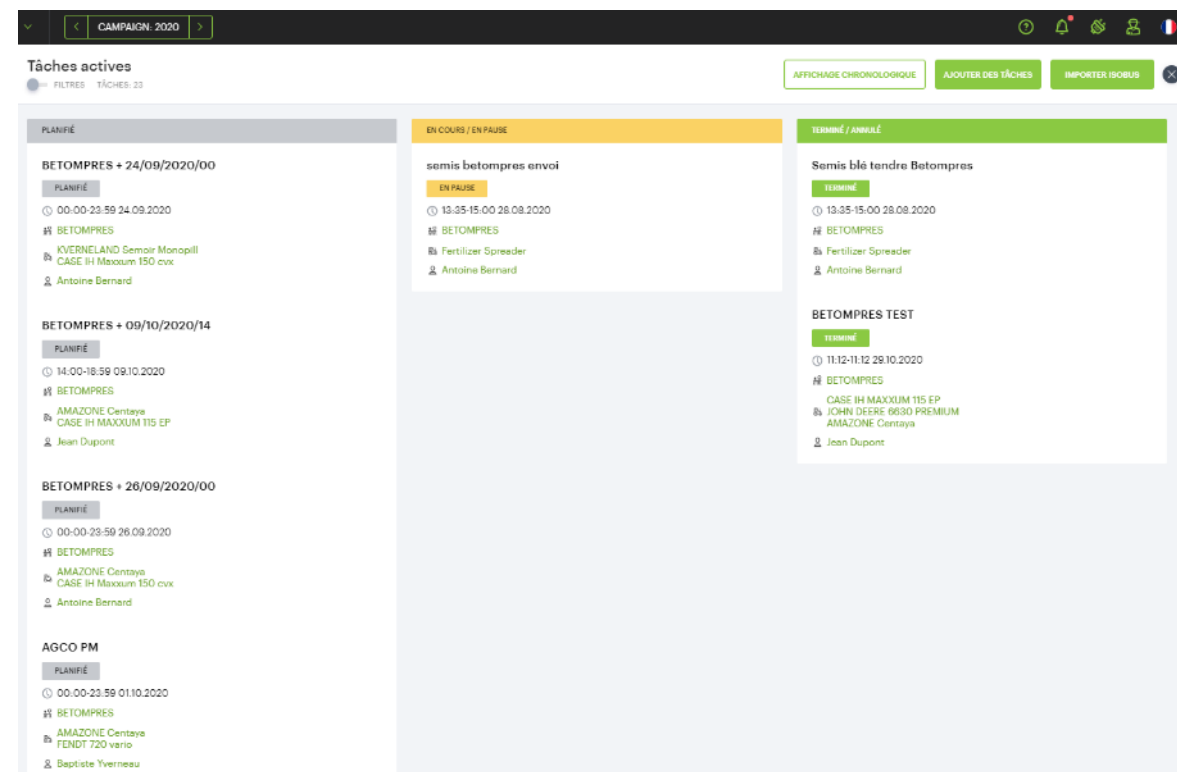
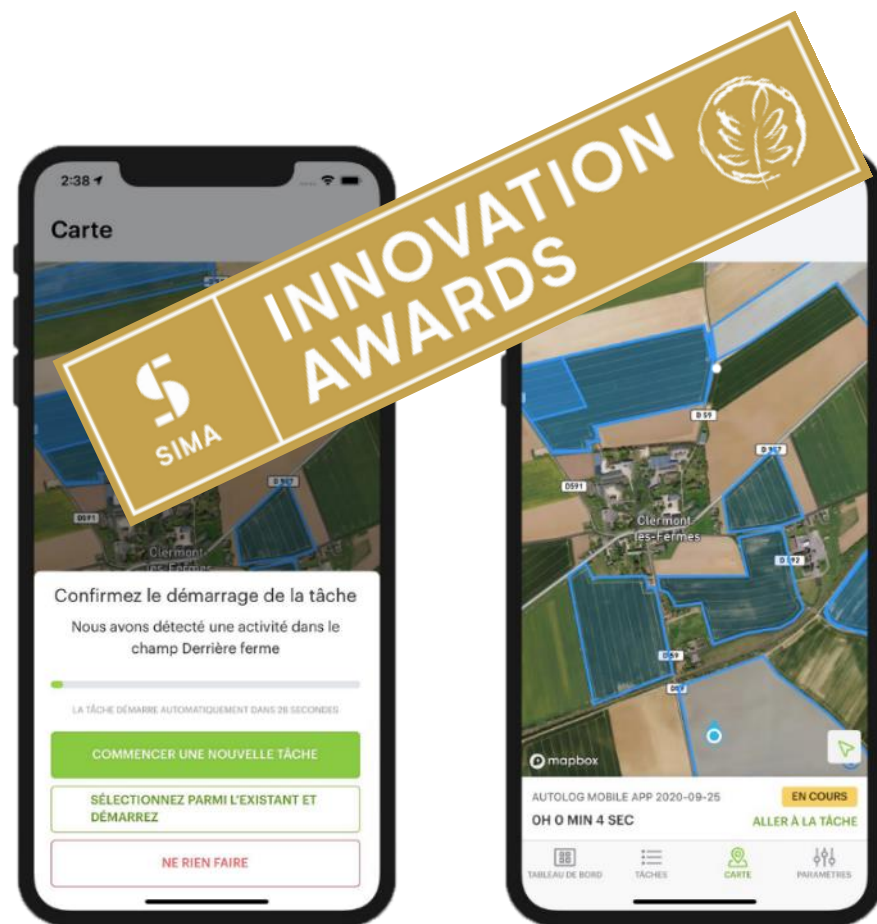


Task Information

START TIME:	28/08/2020 13:35:12
END TIME:	28/08/2020 14:14:57
TOTAL DURATION:	1d 1h 24m 35s
EFFECTIVE TIME:	1h 25m 35s
INEFFECTIVE TIME:	23h 59m
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, INEFFECTIVE TOTAL TIME:	6s
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, EFFECTIVE TOTAL TIME:	1h 23m 19s
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, INEFFECTIVE TOTAL DISTANCE:	20 m
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, EFFECTIVE TOTAL DISTANCE:	14998 m
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, TOTAL AREA:	93900 m ²
ANTONIO CARRARO ERGIT 10.400 TGF / TOPCON X30 / DET-22, APPLICATION TOTAL MASS :	1357 kg



Données traçabilité des interventions par le portable des conducteurs





Start → **Field Selection** → Crop rotations → Soil analysis → Weather → Reference report → Simulation

LIST VIEW



AREA 16.2 Ha



Mont Levis

AREA 16.2 Ha

CROP Winter Wheat



Les Auges

AREA 5.1 Ha



Les Auges

AREA 5.1 Ha

CROP Peas



Les Vignes

AREA 12.7 Ha



Les Vignes West

AREA 6.4 Ha

CROP Winter Wheat



Les Vignes East

AREA 5.3 Ha

CROP Peas



—

AREA 1.0 Ha



Plaisance

AREA 8.3 Ha



Plaisance

AREA 8.3 Ha

CROP Peas



Plaisance 2

AREA 12.7 Ha



EXIT

BACK

NEXT



Start → Field Selection → **Crop rotations** → Soil analysis → Weather → Reference report → Simulation



Fields list

Creux du moulin	Mont aux Noix	Mont Emery	Mont Levis	Les Auges	Les Vignes
Plaisance	Plaisance 2	Vert-fossé			

Crop rotations

YEAR	CROP	YIELD	UNITS	FREQUENCY OF RESIDUES DELIVERY	TYPE OF TILLAGE	WORKING DEPTH OF SOIL (CM)	AVERAGE IRRIGATION (MM/HA/YEAR)	
1	Sugarbeets	80	t/ha	Always returned	Tillage			✖
2	Winter Wheat	85	q/ha	Buried 1 time out of 2	Tillage			✖
3	Peas	50	q/ha	Always returned	Tillage			✖
4	Winter Wheat	85	q/ha	Always returned	No tillage			✖

+ Add another year

Intermediate crops

CROP	BIOMASS	UNITS	FREQUENCY	
Alexandria clover	4	t/ha	1 time out of 3	✖

EXIT

BACK

NEXT



Start → Field Selection → Crop rotations → **Soil analysis** → Weather → Reference report → Simulation



Soil Analysis

☒ ADD SOIL ANALYSIS FOR EACH FIELD INDIVIDUALLY



Creux du moulin

☐ USE GENERIC DATA

TYPE OF SOIL

ARGILE
(G/KG)

CaCO₃
(G/KG)

pH

AZOTE TOTAL
(G/KG)

C / N

CAILLOUX
(%)

DENSITÉ APPARENTE

C ORGANIQUE
(G/KG)

TENEUR MO
(%)

[+ Select SA](#)



Mont aux Noix

☒ USE GENERIC DATA



Mont Emery

☒ USE GENERIC DATA



Mont Levis

☒ USE GENERIC DATA

EXIT

BACK

NEXT



Start → Field Selection → Crop rotations → Soil analysis → Weather → **Reference report** → Simulation



Stored in soil reference: -180 kg C/ha per year

For 5 years



YEARS	STOCK C 0-30 CM T/HA	TENEUR MOYENNE SUR ZONE TRAVAILLEE 0-25 CM		TENEUR MOYENNE SUR PROF DE PRELEVEMENT 0-30 CM	
		TENEUR C G/KG	TENEUR MO %	TENEUR C G/KG	TENEUR MO %
0	42.00	10.20	1.73	10.20	1.73
1	41.6	10.10	1.71	10.09	1.70
2	41.3	9.99	1.69	9.94	1.68
3	41.1	9.87	1.67	9.83	1.66
4	40.9	9.73	1.65	9.69	1.64
5	40.8	9.65	1.64	9.51	1.63

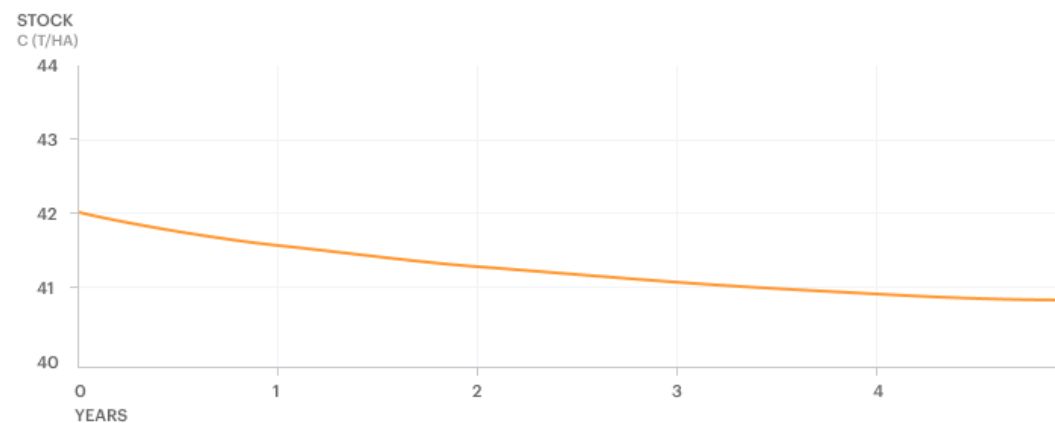
Show for 30 years

POWERED BY



Evolution du stock de C organique sur 0-30 cm

Evolution de la teneur en C organique de la couche travaillée



Reference

SHOW FOR 5 YEARS



Reference report → **Simulation** → Simulation report



☒ INTERMEDIATE CROPS AND LEGUMES

Introduction of cover crops to your crop rotation have a positive impact on storage, and it enables to use less fertilizer

☒ NO TILLAGE

No tillage increases carbon storage in the working area and avoids CO₂ emissions

☒ ORGANIC FERTILIZER

An increasing amount of organic fertilizer lowers the emissions and increases soil storage.

☐ EXPORT RESIDUES

Leaving crop residues allows organic matter to be added to the soil, thus increasing the storage of C. However, this will increase CO₂ emissions

☐ LIMING

Liming acidic soils promotes plant nutrient uptake and thus avoids CO₂ emissions

Crop rotation

YEAR	CROP	YIELD	FREQUENCY OF RESIDUES DELIVERY (REFERENCE)	TYPE OF TILLAGE (REFERENCE)	WORKING DEPTH OF SOIL (CM) (REFERENCE)	TYPE OF TILLAGE (SIMULATION)	WORKING DEPTH OF SOIL (CM) (SIMULATION)	AVERAGE IRRIGATION (MM/HA/YEAR)	
1	Sugarbeets	80 t/ha	Always returned	Tillage	30	No tillage ▾	5	0	✖
2	Winter Wheat	85 q/ha	Buried 1 time out of 2	Tillage	30	Tillage ▾	30	0	✖
3	Peas	50 q/ha	Always returned	Tillage	30	No tillage ▾	5	60	✖
4	Winter Wheat	85 q/ha	Always returned	Tillage	30	No tillage ▾	5	0	✖

➕ Add another crop

Intermediate crops

CROP	BIOMASS (REFERENCE)	FREQUENCY (REFERENCE)	BIOMASS (SIMULATION)	UNITS	FREQUENCY (SIMULATION)	
Alexandria clover	4 t/ha	1 time out of 3	4 ▾	t/ha ▾	1 time out of 3 ▾	✖
Chinese Radishes ▾	—	—	2 ▾	t/ha ▾	1 time out of 4 ▾	✖

EXIT

BACK

CALCULATE



Reference report → Simulation → Confirmation → **Simulation report**

ACTIONS



Stored in soil estimate: +239 kg C/ha per year

Difference in storage: +419 kg eq C/ha per year

Period: 2021—2025



YEARS	STOCK C 0-30 CM T/HA	TENEUR MOYENNE SUR ZONE TRAVAILLEE 0-25 CM		TENEUR MOYENNE SUR PROF DE PRELEVEMENT 0-30 CM	
		TENEUR C G/KG	TENEUR MO %	TENEUR C G/KG	TENEUR MO %
0	42.00	10.20	1.73	10.20	1.73
1	42.3	10.10	1.71	10.09	1.70
2	42.49	9.99	1.69	9.94	1.68
3	42.67	9.87	1.67	9.83	1.66
4	42.8	9.73	1.65	9.69	1.64
5	42.9	9.65	1.64	9.51	1.63

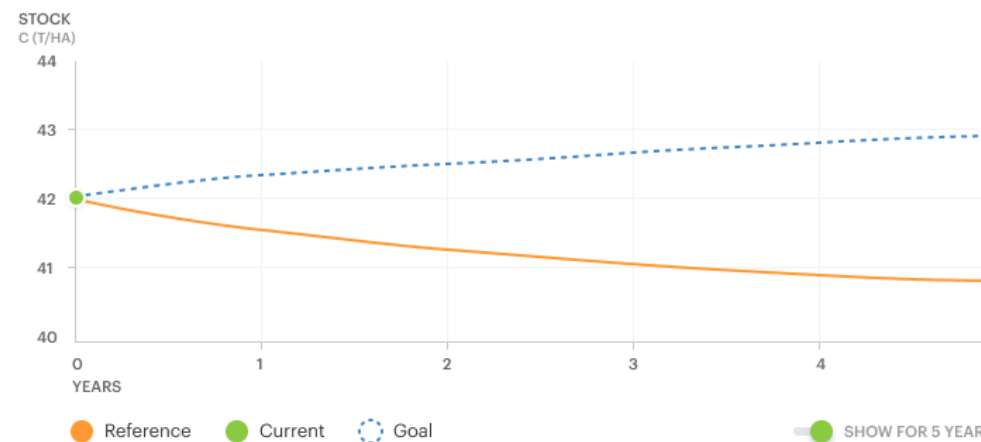
Show for 30 years

POWERED BY



Evolution du stock de C organique sur 0-30 cm

Evolution de la teneur en C organique de la couche travaillée



EXIT

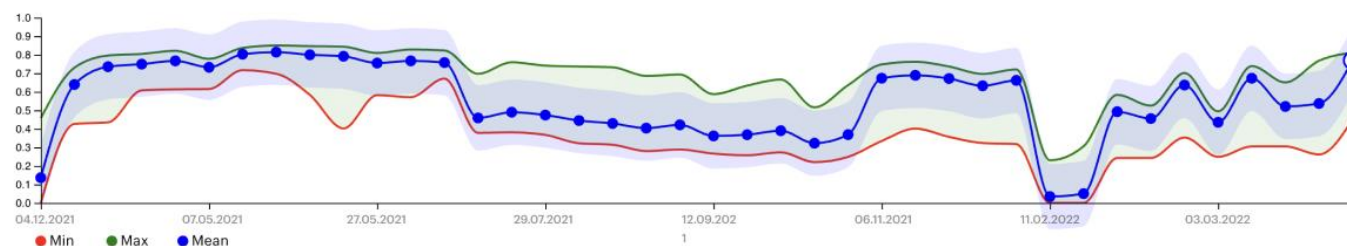
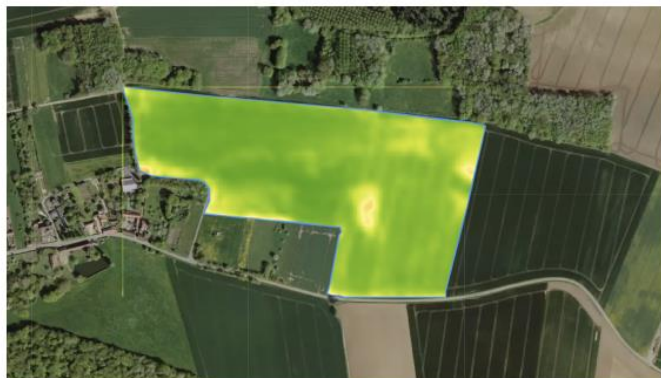
BACK

SAVE



✓ Intermediate crops and legumes

Satellite images and indexes shows crops rotation. Specific tasks were done regarding seeding intermediate crops.



Seeding at Les Vignes

COMPLETED



SEEDING

🕒 13.07.2021 11:00—15:00

📍 Les Vignes

🚜 Kubota M7001 #1

👤 Nicolas Bullot

Spreading organic fertilizer at Les Vignes

COMPLETED



FERTILIZING

🕒 13.10.2021 10:00—17:00

📍 Mont Levis

🚜 Kubota M7001 #1

👤 Nicolas Bullot

✓ No tillage

To tillage operations detected



5 years commitment



Intermediate crops and legumes

Added intermediate crops to rotation



More use of organic fertilisers

Added organic fertiliser



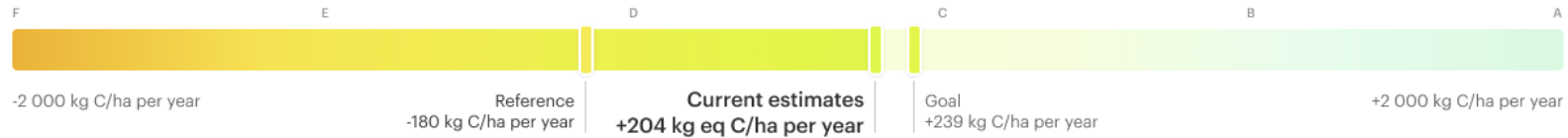
No tillage

Some operations are not according to plan
Most of campaigns are without tillage



Stored in soil estimate: +204 kg C/ha per year

Difference in storage: +384 kg eq C/ha per year
Period: 2021—2025



YEARS	STOCK C 0-30 CM T/HA	TENEUR MOYENNE SUR ZONE TRAVAILLEE 0-25 CM		TENEUR MOYENNE SUR PROF DE PRELEVEMENT 0-30 CM	
		TENEUR C G/KG	TENEUR MO %	TENEUR C G/KG	TENEUR MO %
0	42.00	10.20	1.73	10.20	1.73
1	42.1149	10.10	1.71	10.09	1.70
2	42.2048	9.99	1.69	9.94	1.68
3	42.2947	9.87	1.67	9.83	1.66
4	42.3776	9.73	1.65	9.69	1.64
5	42.4535	9.65	1.64	9.51	1.63

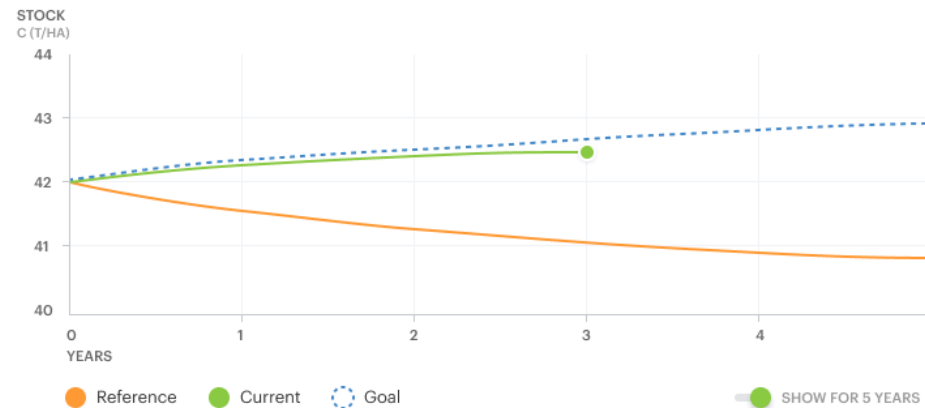
Show for 30 years

POWERED BY



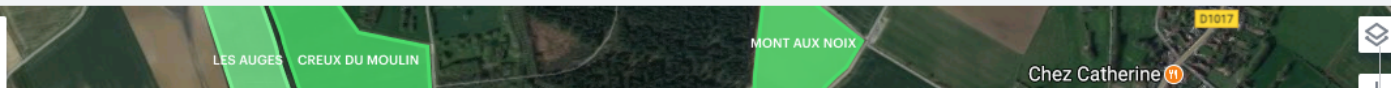
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Evolution de la teneur en C organique de la couche travaillée

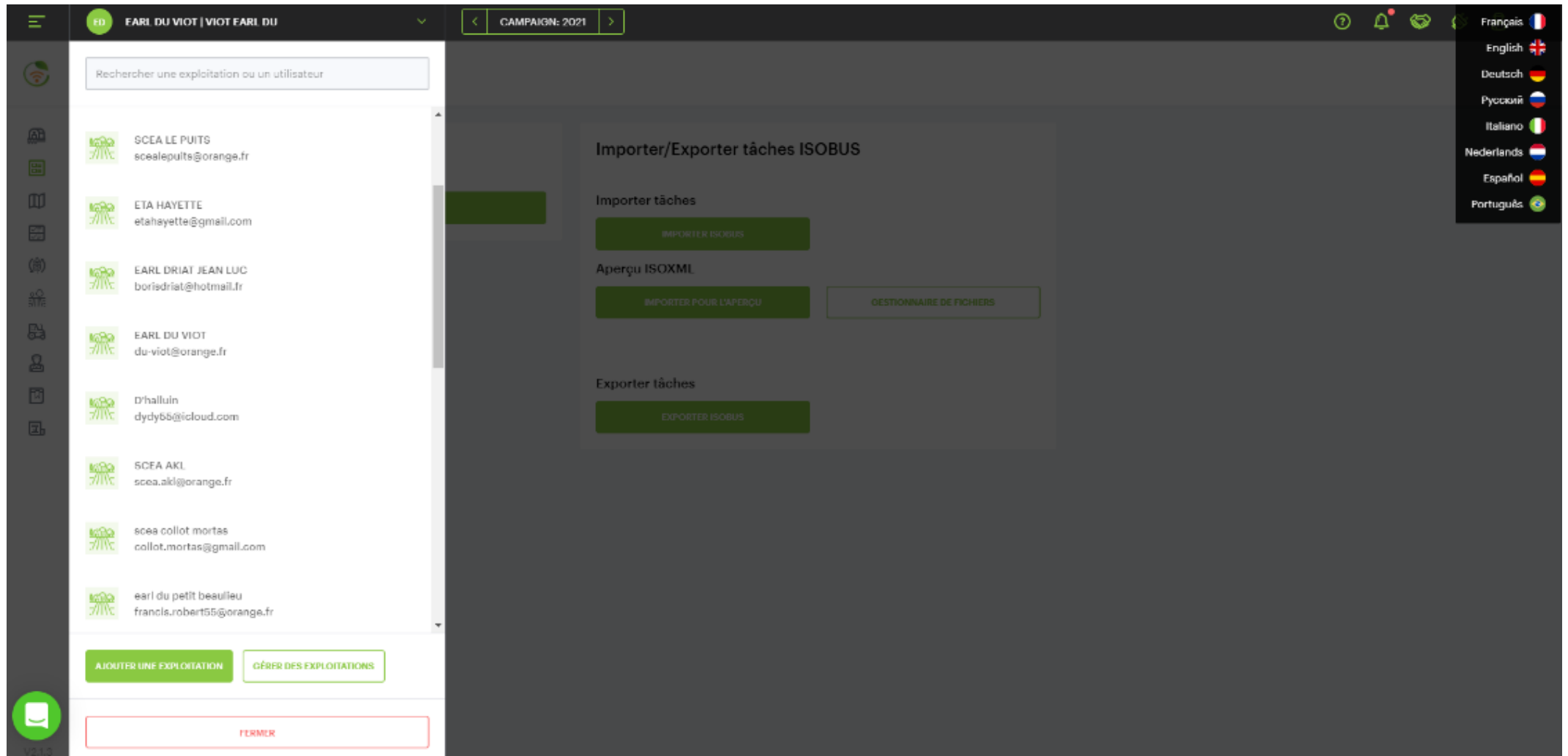


KG EQ C/HA PER YEAR

300
239 (Goal)



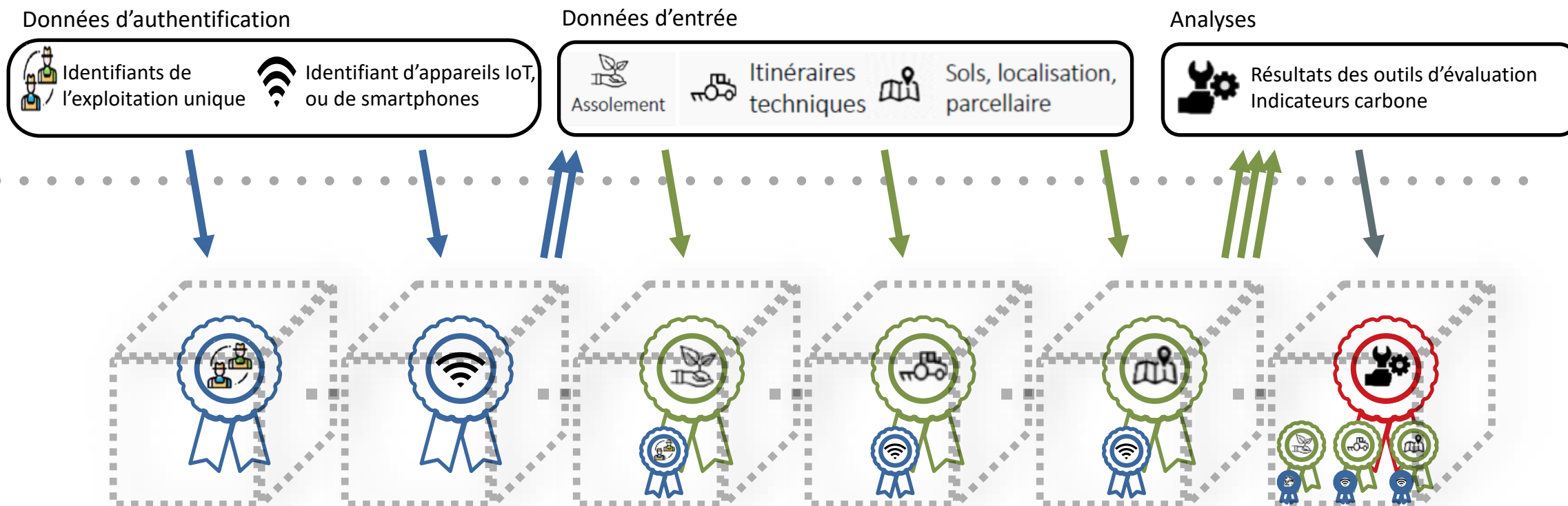
Plateforme collaborative



Sécurité et appartenance des données



La BlockChain pour certifier les données et garantir les transactions



En savoir plus sur MyEasyCarbon

<https://www.myeasyfarm.com/myeasycarbon-demo-en-ligne>



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- [Présentation MyEasyCarbon – Mercredi 2 juin à 14h \(Français\)](#)
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