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Irré-LIS®
a decision support tool for irrigation

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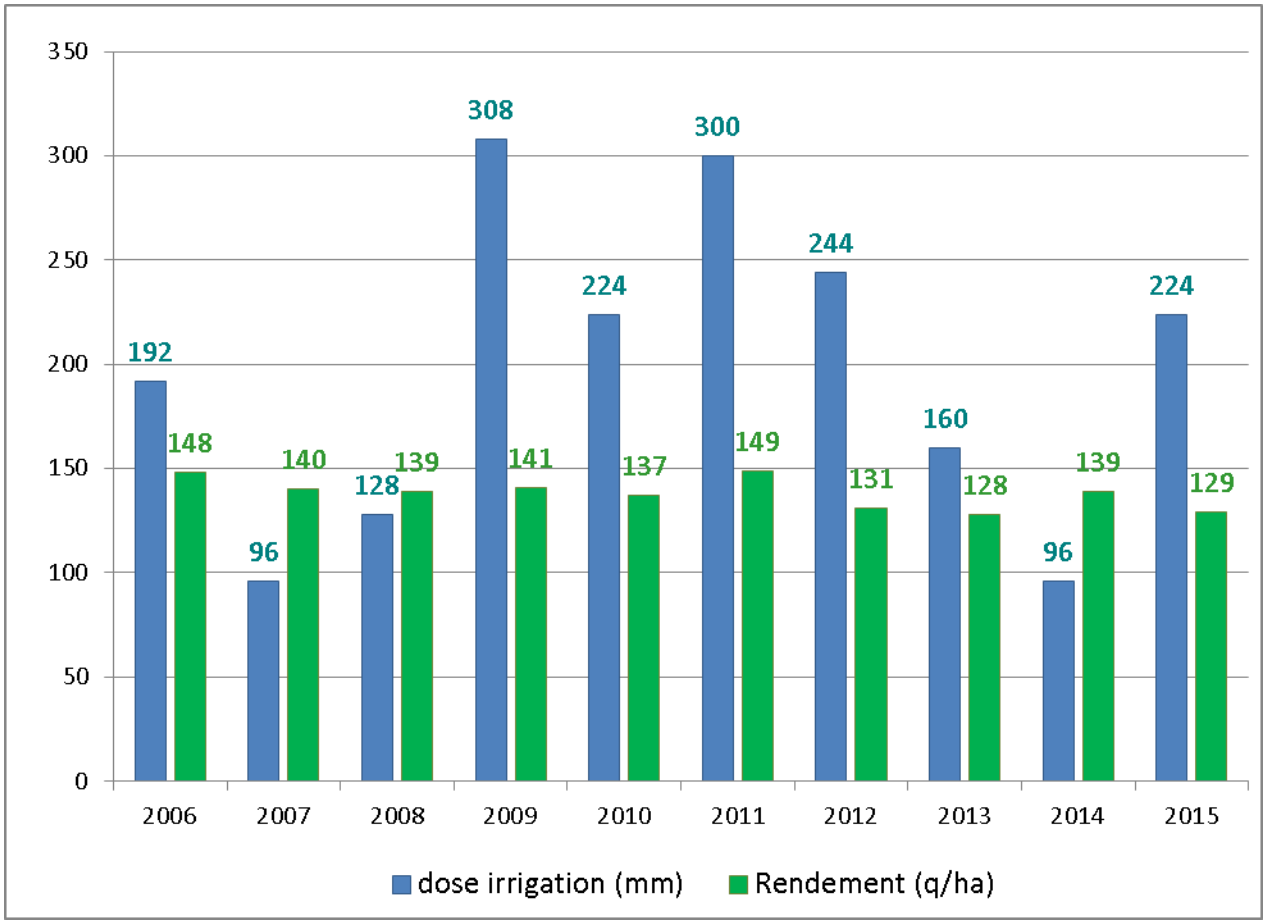
Context

- 1.5 million hectare irrigated in France
- 88% cash crops (cereals, oil seeds, protein crops)
- Irrigation represents 5% of total french farmed lands
- Water consumption of 3 billions of m^3
- Increase in pressure on water resources for agriculture

What is at stake ?

A better adaptation of irrigation to climatic year



Maize irrigation (late variety – single crop farming observatory)
Arvalis – Lyon St Exupery (69 – France)

Different stakes according to the types

Type	Water saving	Yield	Quality	Arbitration between fields
Maize	+++	++	Ø	+
Seed maize	+++	++	Ø	Ø
Wheat	+	++	+	++
Durum wheat	+	++	++	++
Spring barley	+	++	+++	++
Pea	+	+++	+	++

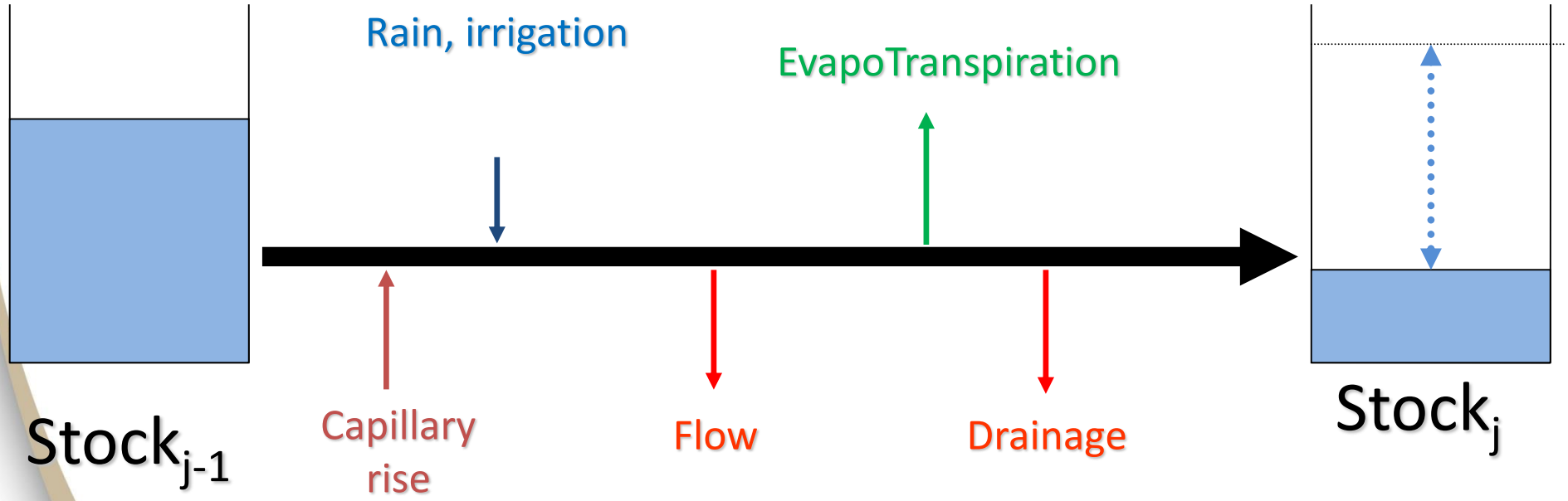
Methods to estimate water evolution in soil

Two different approachs which can complement one other :

- Water balance : water evolution in soil model (for example Irré-LIS®)
- Measures with soil sensors (like capacitive sensors) associated with decision rules

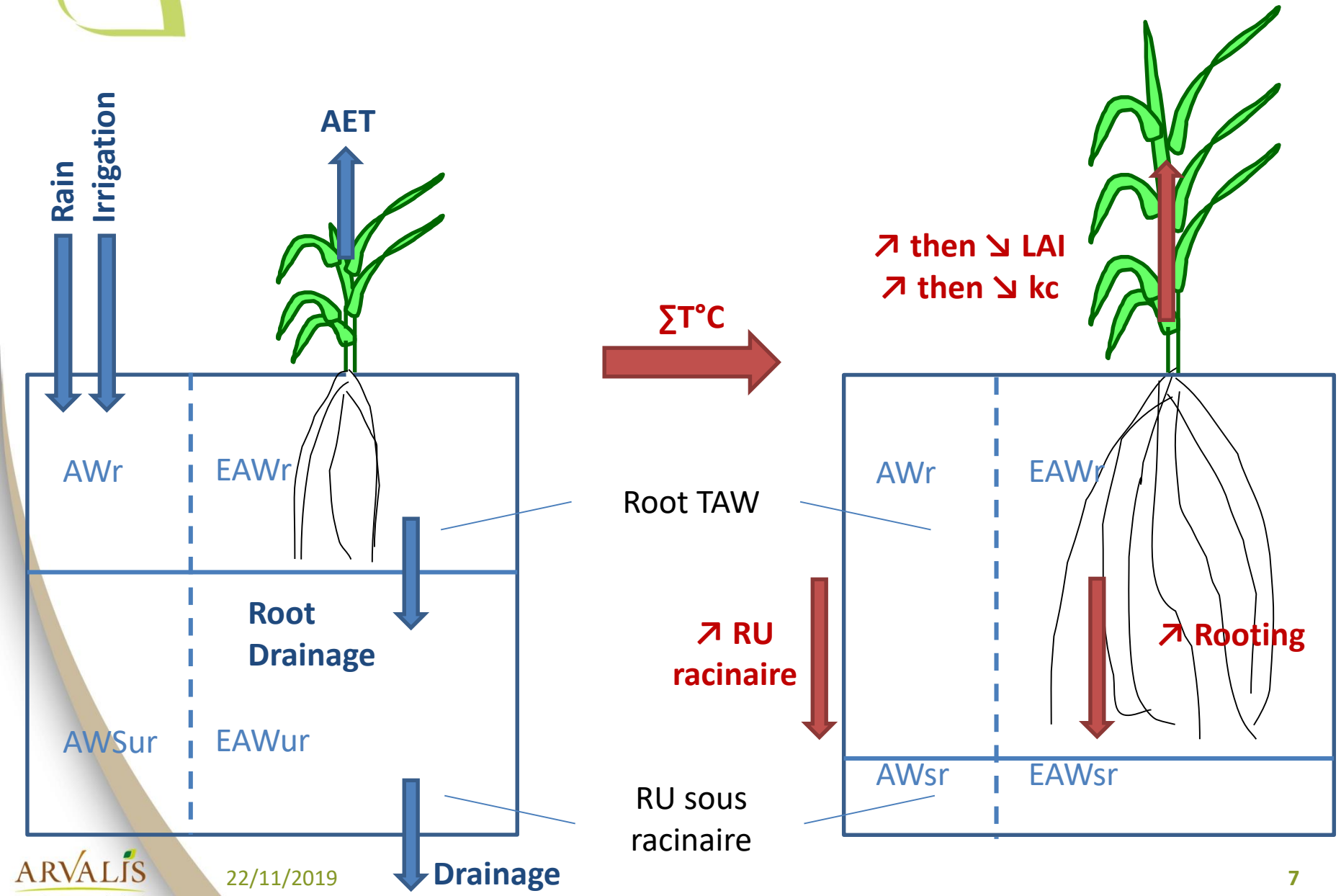
Water balance

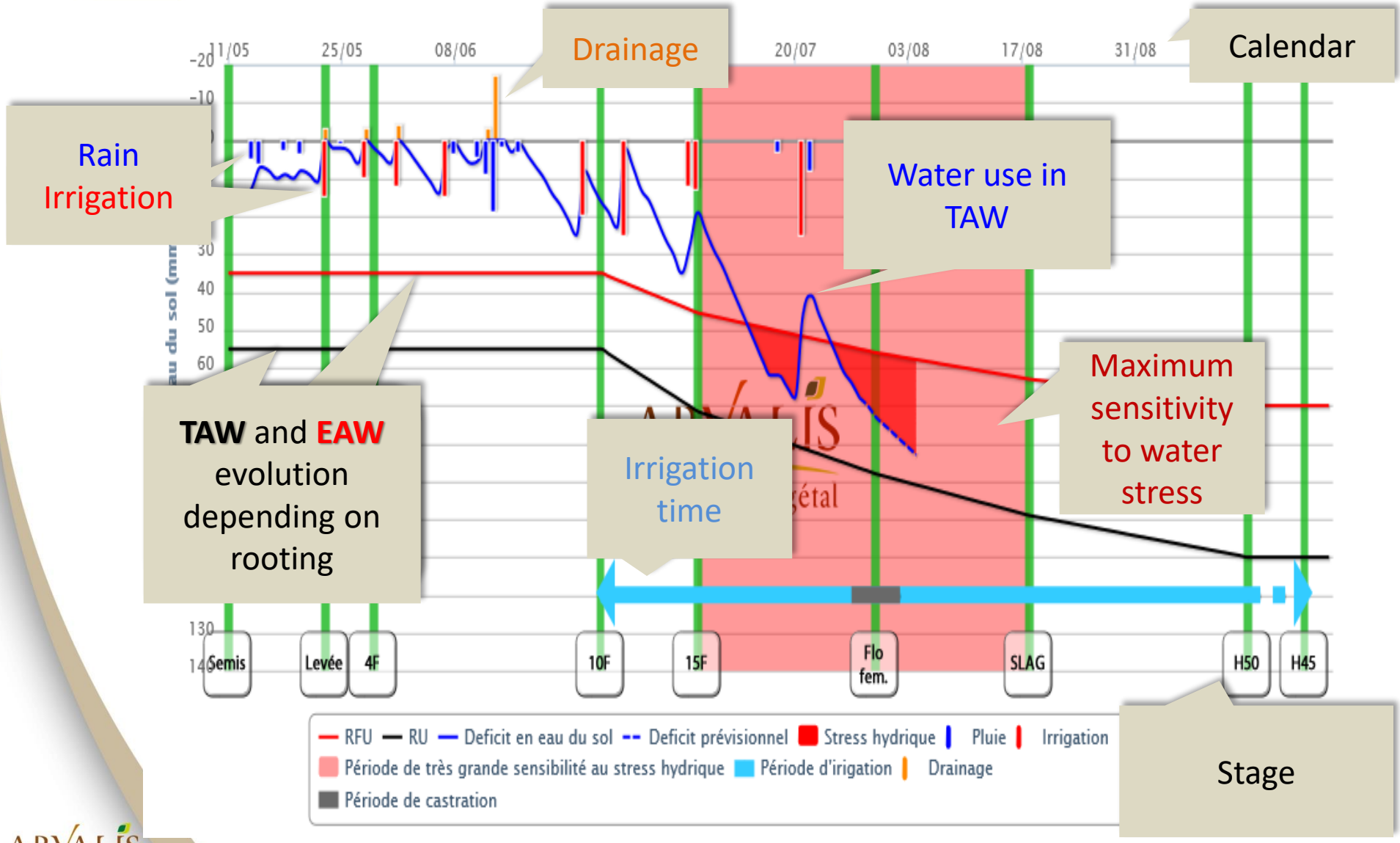
Objective : determine at a given moment the soil water state



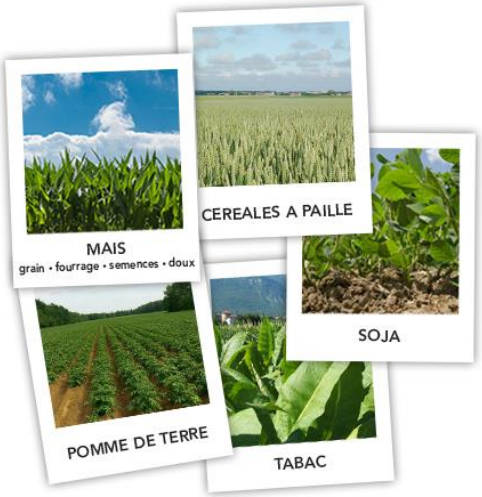
No sensor, no measure !

What's Irré-LIS® ?




Drainage
Calendar
Rain
Irrigation
Water use in TAW
TAW and EAW evolution depending on rooting
Irrigation time
Maximum sensitivity to water stress
Stage
11/05
25/05
08/06
20/07
03/08
17/08
31/08
Semis
Levée
4F
10F
15F
Flo fem.
SLAG
H50
H45
RFU
RU
Deficit en eau du sol
Deficit prévisionnel
Stress hydrique
Pluie
Irrigation
Période de très grande sensibilité au stress hydrique
Période d'irrigation
Drainage
Période de castration

Who is using the tool ?



Soybean developed with Terres Inovia

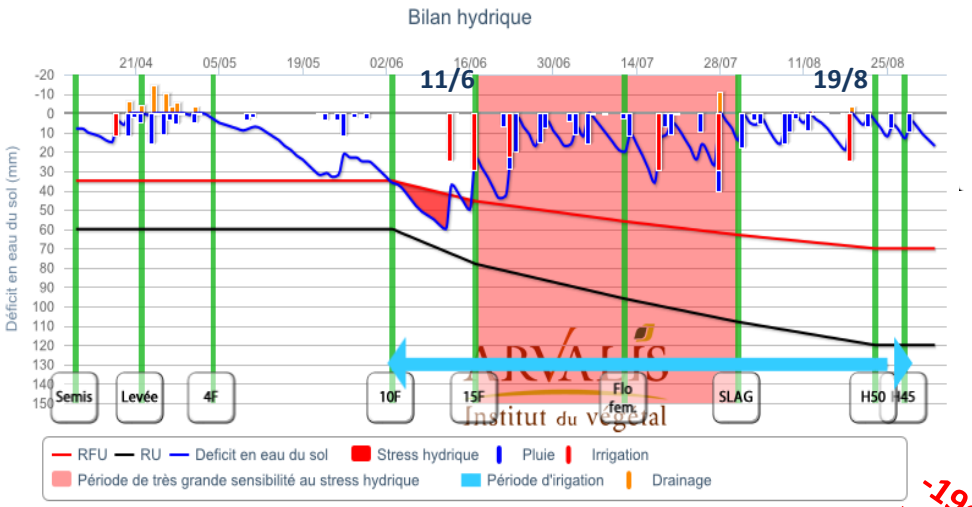
- Around 2 500 fields managed with Irré-LIS®
- 35 000 ha in 2019
- Available on potatoe, maize, seed maize, wheat, durum wheat, spring barley, soybean and tobacco

Arterris
L'Art de la Terre

IRRI RepCre

The good start

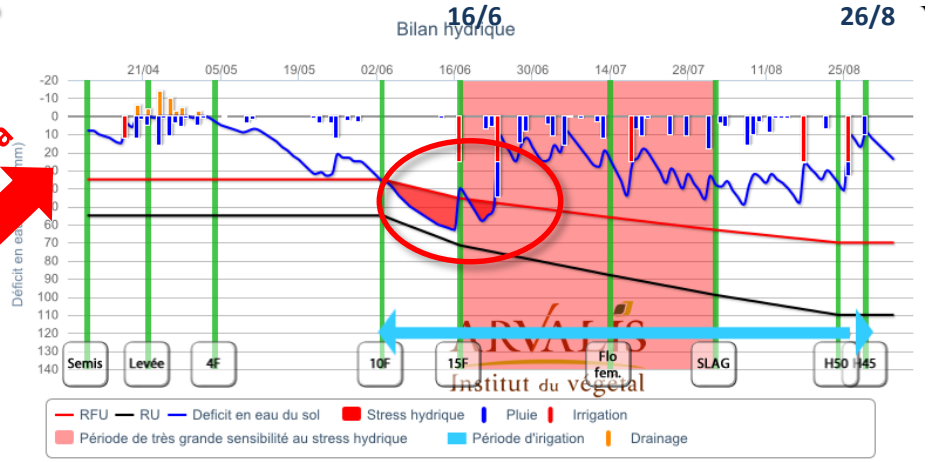
Irré-LIS (163mm)



Hyb DKC … = 136 q/ha

-12 q/ha

Early water stress (125mm)

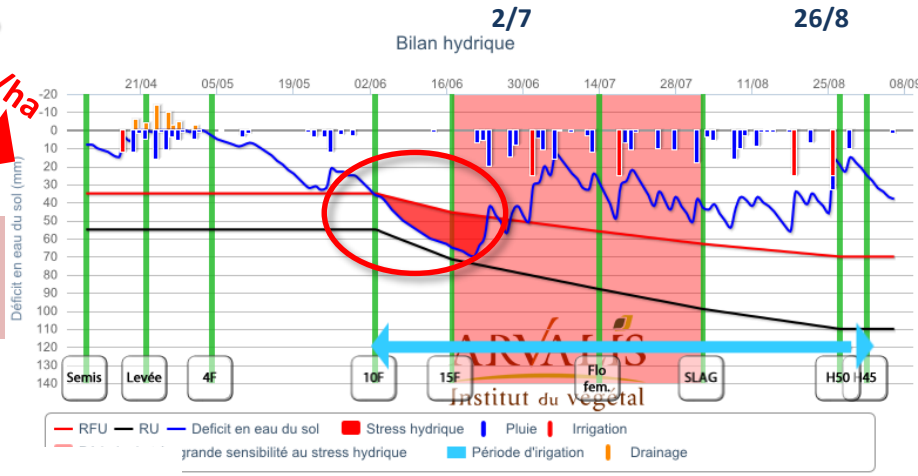


Hyb DKC …. = 124 q/ha

-7q/ha

Severe early water stress (100mm)

-19q/ha



Late start (5 days) : -**12 q/ha**
Very late start (21 days) : -**19 q/ha**

Loamy soil

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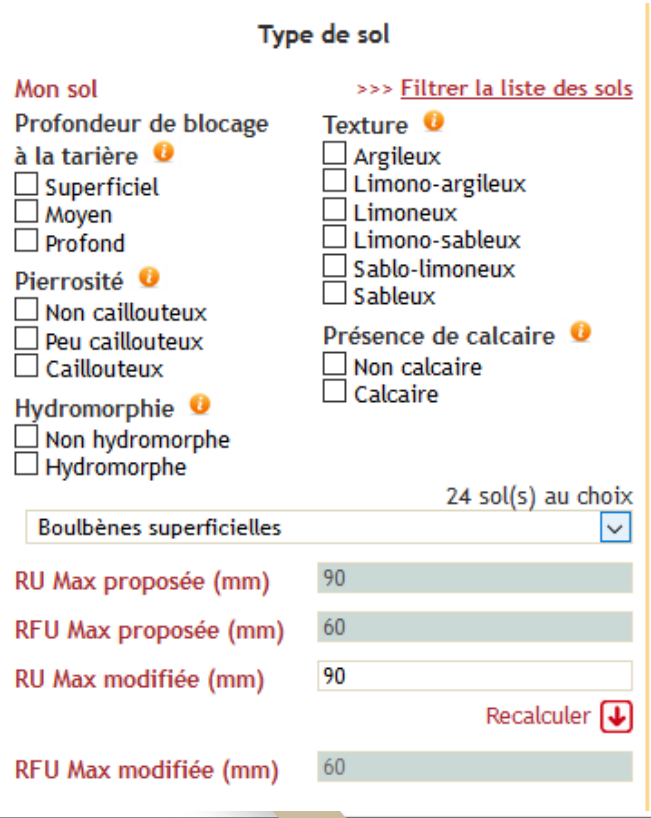
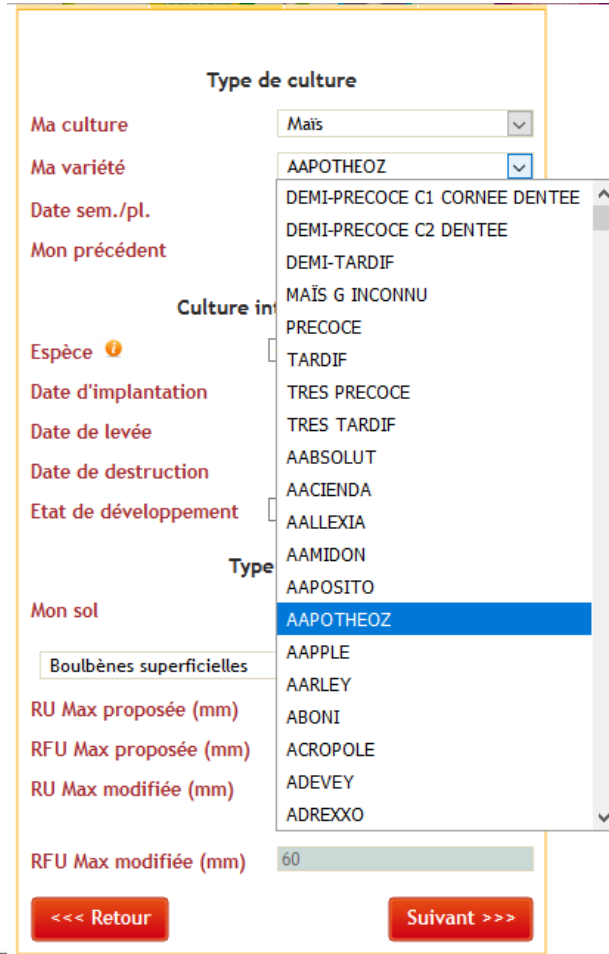
Irré-LIS advantage

- French soil database
- Variety database
- Spatialized weather data





Conclusion

- Irré-LIS is one existing tool to help French farmers for irrigation
- Many others exist : Field Net Advisor, Irrinet, all the solutions with sensors…
- Main goal is that farmers manage their irrigation whether they use models or sensors