Verde Smart Nutrición's

NUTRISENS

• THE FIRST SOIL POLLUTION METER •

A WORLDWIDE PROBLEM

Groundwater is getting **contaminated with nitrates by agriculture** and livestock, affecting to the health of millions of people and even causing cancer.

Developed countries have established **control procedures by law** to reduce fertilizer use, **but this contamination** level's on ranches and farms **cannot be measured…**

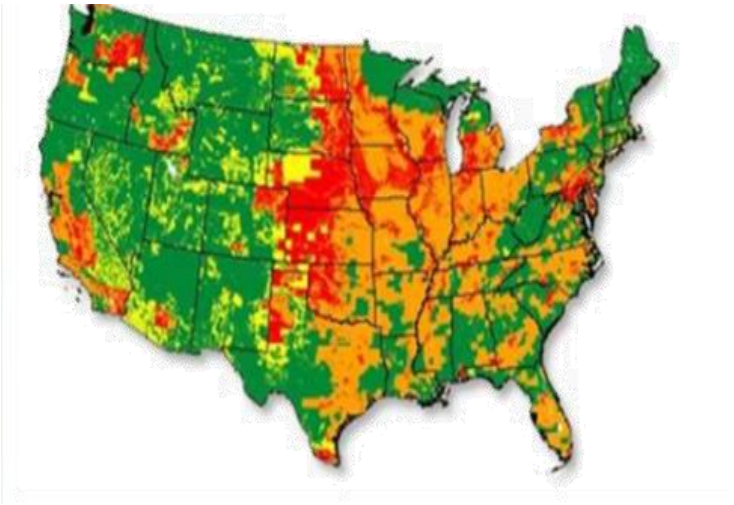
HOW BIG IS THIS PROBLEM?

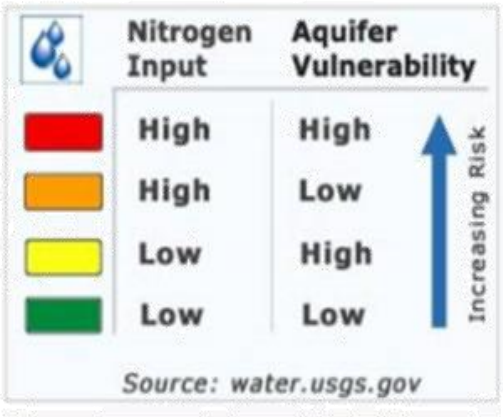
It's huge...

140 MILLION TONNES OF FERTILIZER
are used by farmers every year

...and based on
intuitive decisions!

USA is just an example.





THE SOLUTION

The first soil pollution meter

NUTRISENS

A special sensor to measure
NITRATE & POTASSIUM
in the soil.

- PATENTED & ALREADY AVAILABLE
- 6 YEARS OF R&D
- SUCCESS STORIES (ALMERÍA)
- COMPATIBLE WITH THE BEST SMART AGRICULTURE PLATFORMS

THE SOLUTION

The first soil pollution meter

NUTRISENS

A special sensor to measure
NITRATE & POTASSIUM
in the soil.

- THE PACK INCLUDE ELECTRONIC, THE SENSOR AND THE CABLE
- SENSOR LIFE: 2 YEARS
- LIFE OF ELECTRONIC AND CABLE: 7-10 YEARS

THE SOLUTION

The first soil nutrition management tool

NUTRISENS

A special sensor to measure
NITRATE & POTASSIUM
in the soil: a gelatine filter the nitrate and potassium

POTASSIUM

NITRATE

THE SOLUTION

The first soil nutrition management tool

NUTRISENS

A special sensor to measure NITRATE & POTASSIUM in the soil can detect:

- IF PLANT IS UPTAKING NITRATE
- IF NITRATE IS LEACHED OR NOT
- OVER OR UNDER NITRATE IRRIGATION CONCENTRATION
- UNDERSTAND HOW WEATHER CONDITIONS AFFECTS NUTRIENT UPTAKE

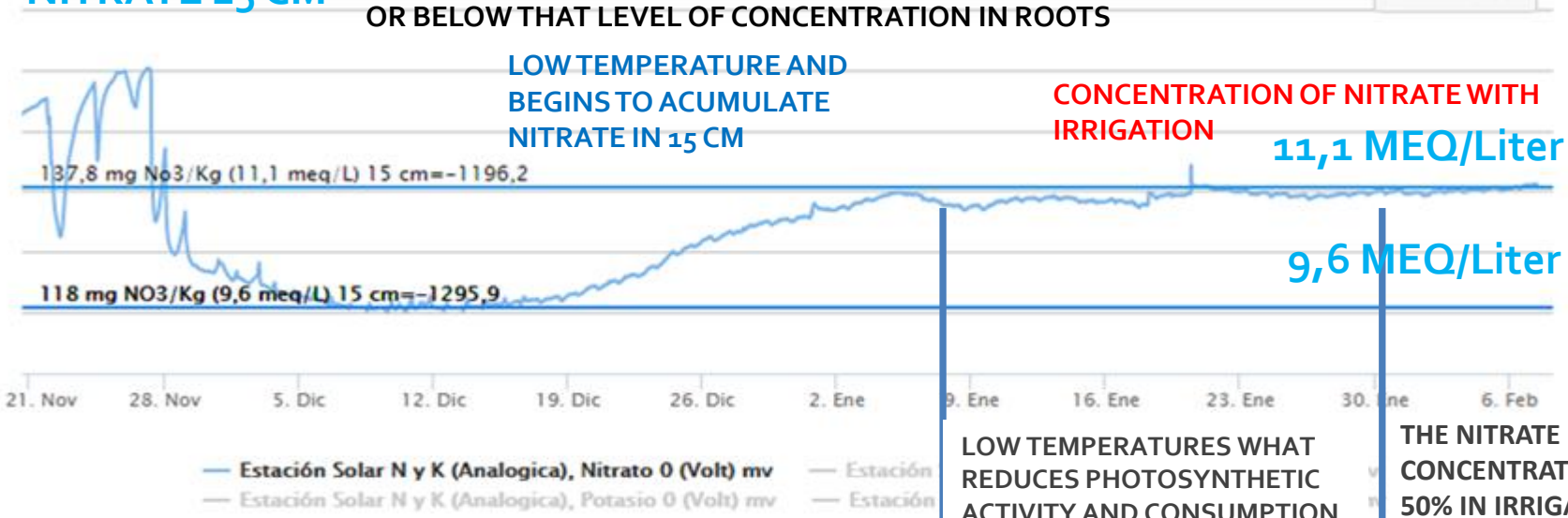
NITRATE UPTAKE/WEATHER-SOIL MOISTURE

We can **understand the daily or weekely changes in the sensor** value integrating its data with other sources of data (weather, soil moisture)

NITRATE SAVING: NITRATE WASHED IN 30 CM IS DETECTED IN TOMATO CAUSED BY LOW TEMPERATURE

NITRATE 15 CM

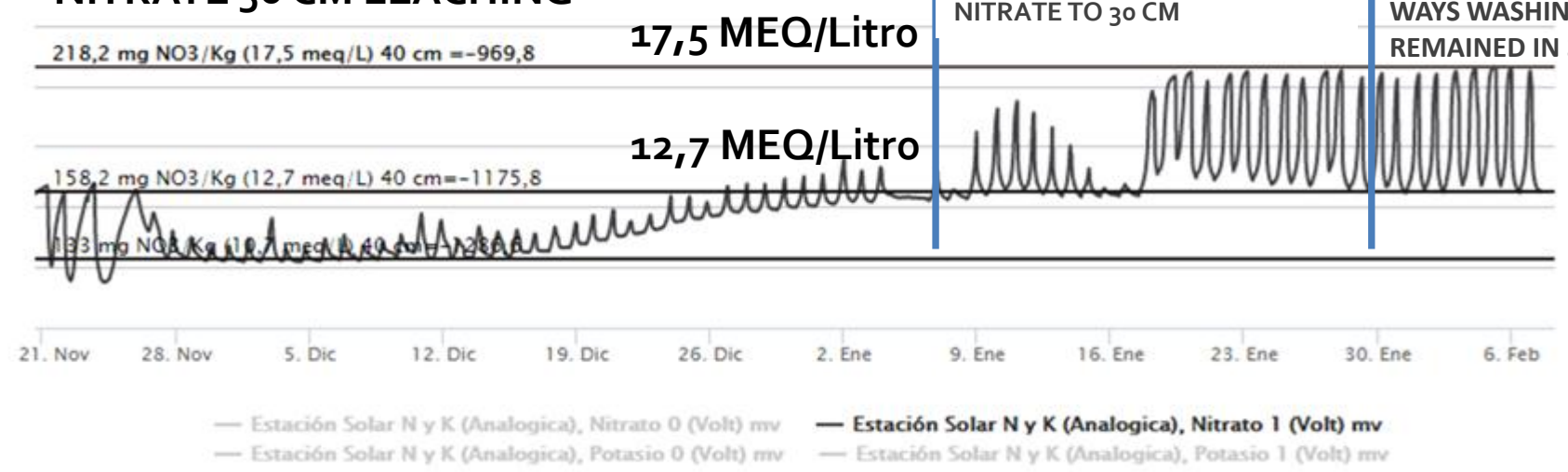
IF WE KNOW THE INJECTION CONCENTRATION WE CAN UNDERSTAND IF THE PLANT IS ABOVE OR BELOW THAT LEVEL OF CONCENTRATION IN ROOTS



LOW TEMPERATURES WHAT REDUCES PHOTOSYNTHETIC ACTIVITY AND CONSUMPTION OF NITRATE AND WASHES NITRATE TO 30 CM

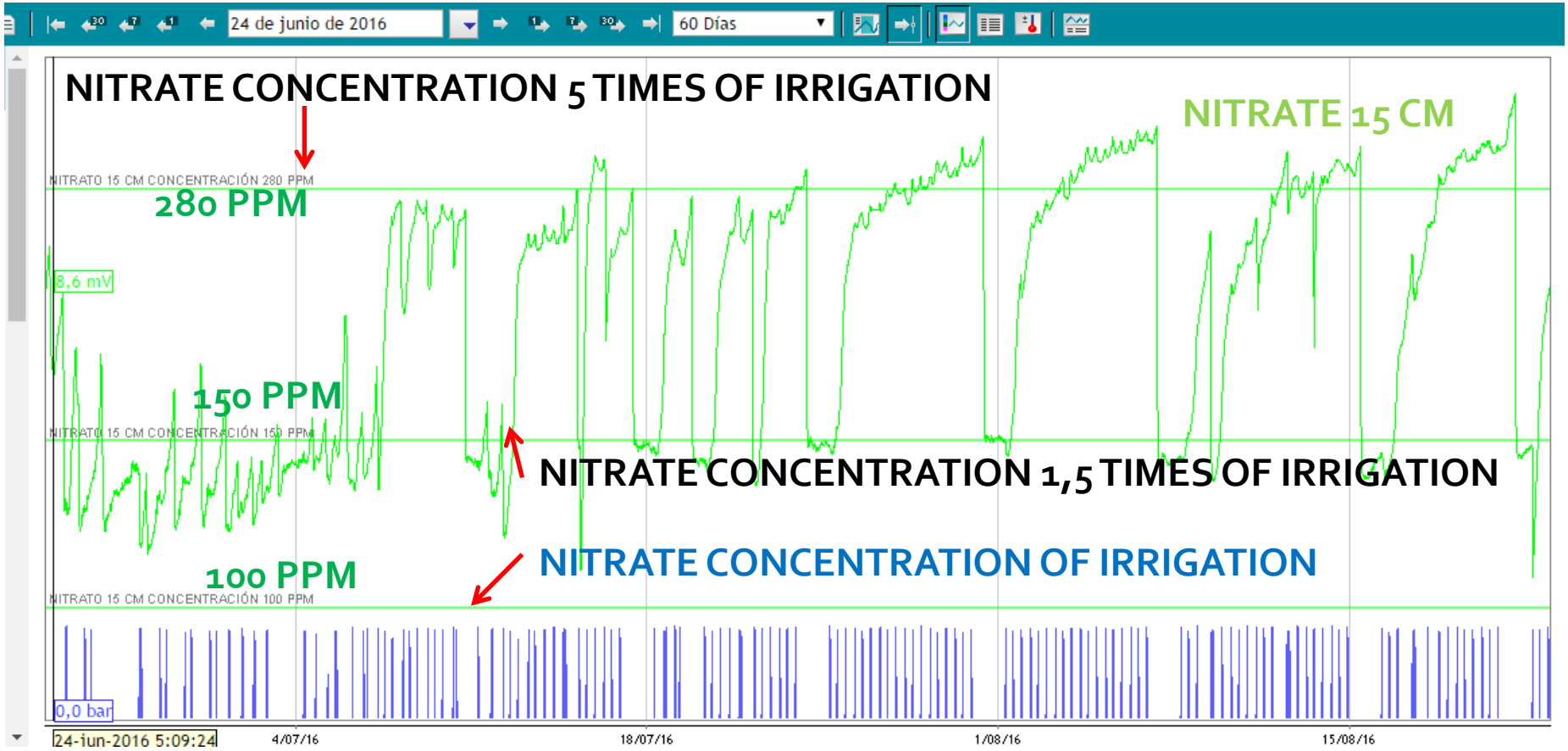
THE NITRATE CONCENTRATION OF A 50% IN IRRIGATION IS REDUCED AND IN ALL WAYS WASHING IS REMAINED IN 30 CM

NITRATE 30 CM LEACHING



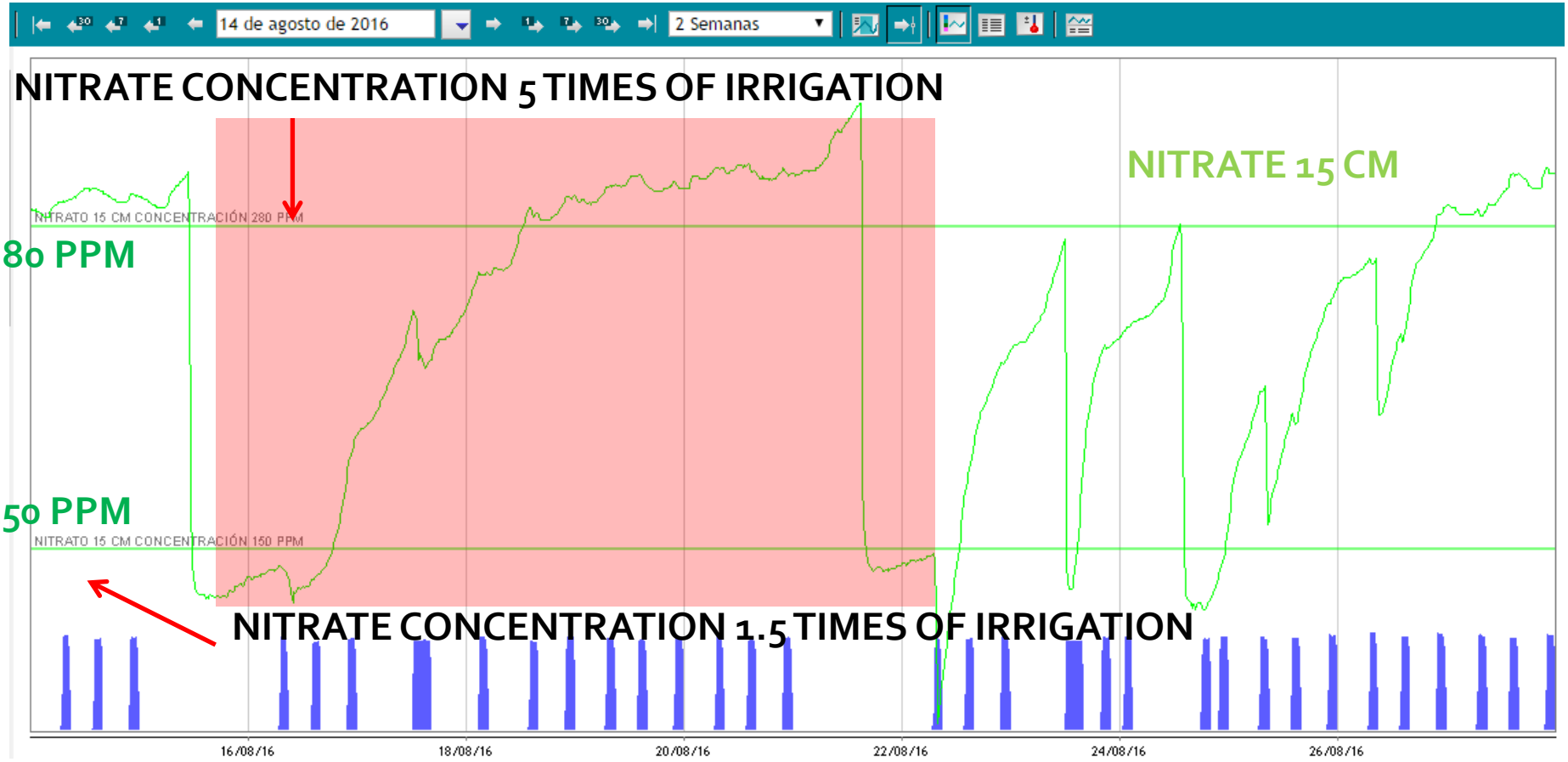
NITRATE AND POTASSIUM PROBES: KNOW IF NUTRIENTS ARE CUMULATED, LACKED OR LEACHED

WE MARK REFERENCES OF NITRATE CONCENTRATION: I SEE IF I AM CONTRIBUTING A LOT AND NITRATE IS ACCUMULATED OR SHORTED WITH REGARD TO THE IRRIGATION **CONCENTRATION**



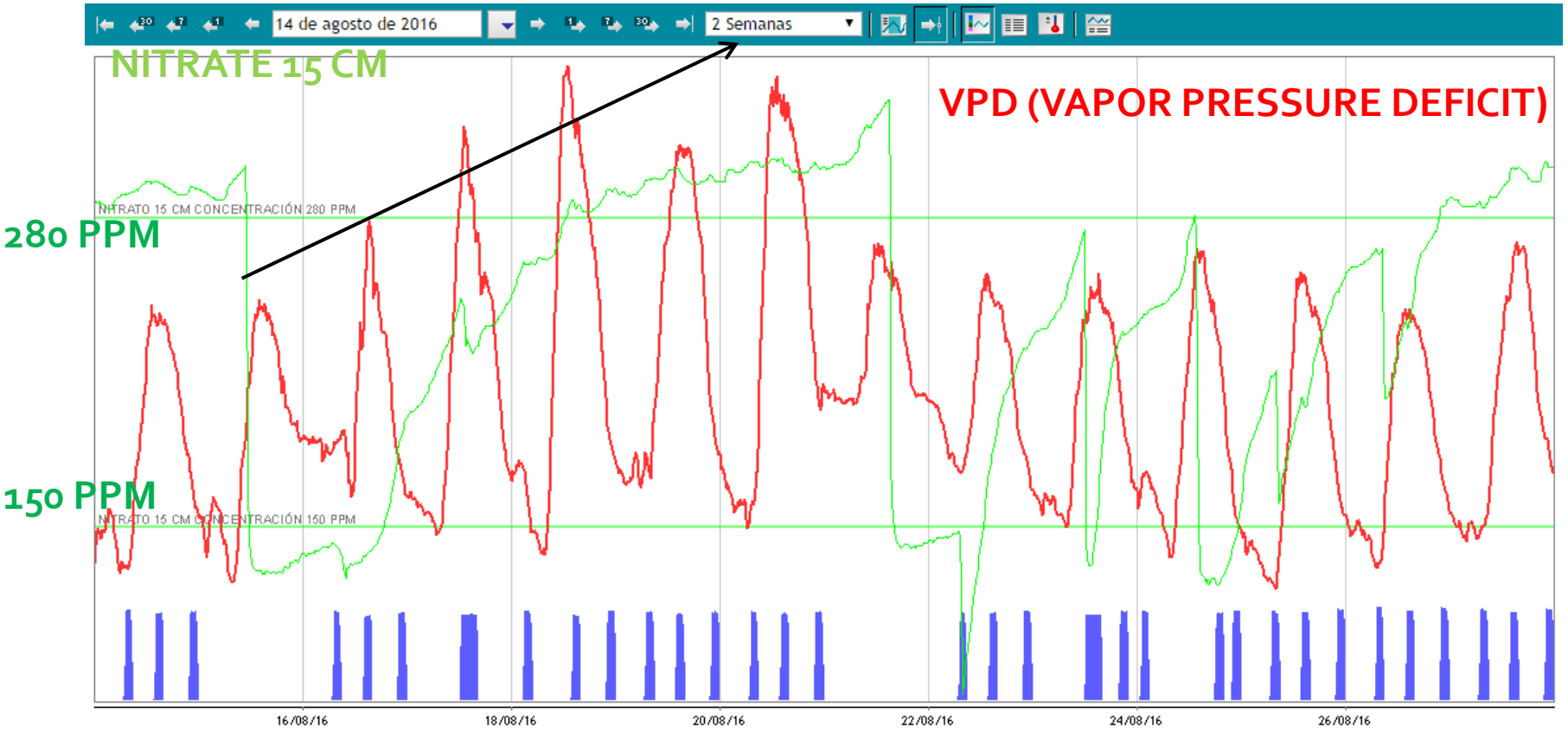
CRITRICS IN MURCIA (SPAIN)

DETAIL OF TREND NITRATE 15 CM 2 WEEKS



WE CAN DETECT WHEN PRODUCE EXCESS CONCENTRATION AND DESIGNING ALARMS

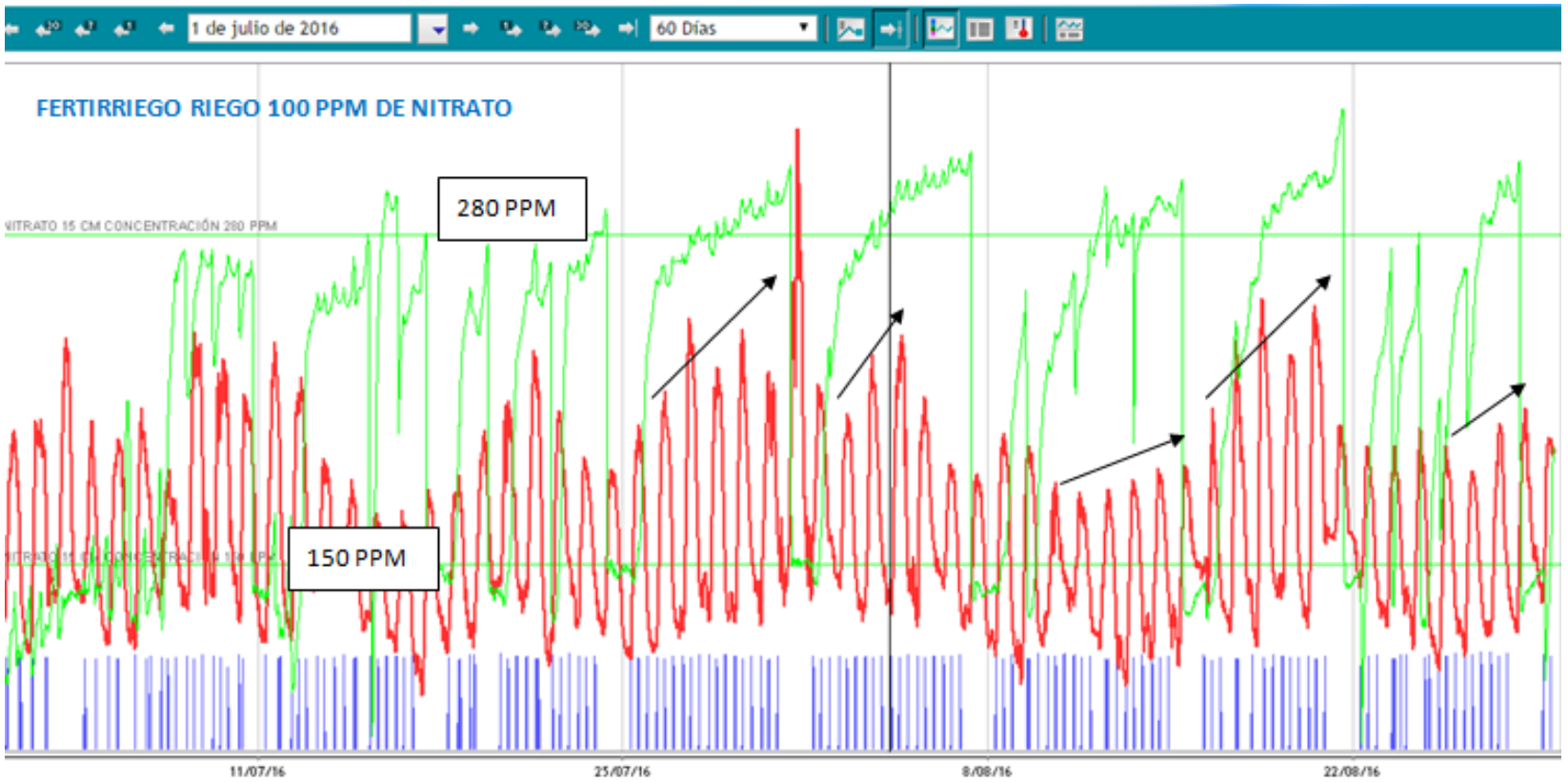
WE CAN UNDERSTAND THE INFLUENCE OF CLIMATE STRESS ON NITRATE ABSORPTION



THE TENDENCY OF INCREASE OF THE VPD FACILITATES THE **STOMATIC CLOSURE,** WHICH INFLUENCES **IN A LOWER PHOTOSYNTHETIC ACTIVITY,** LESS CONSUMPTION OF NUTRIENTS **AND THEREFORE NITRATES ARE ACCUMULATED**

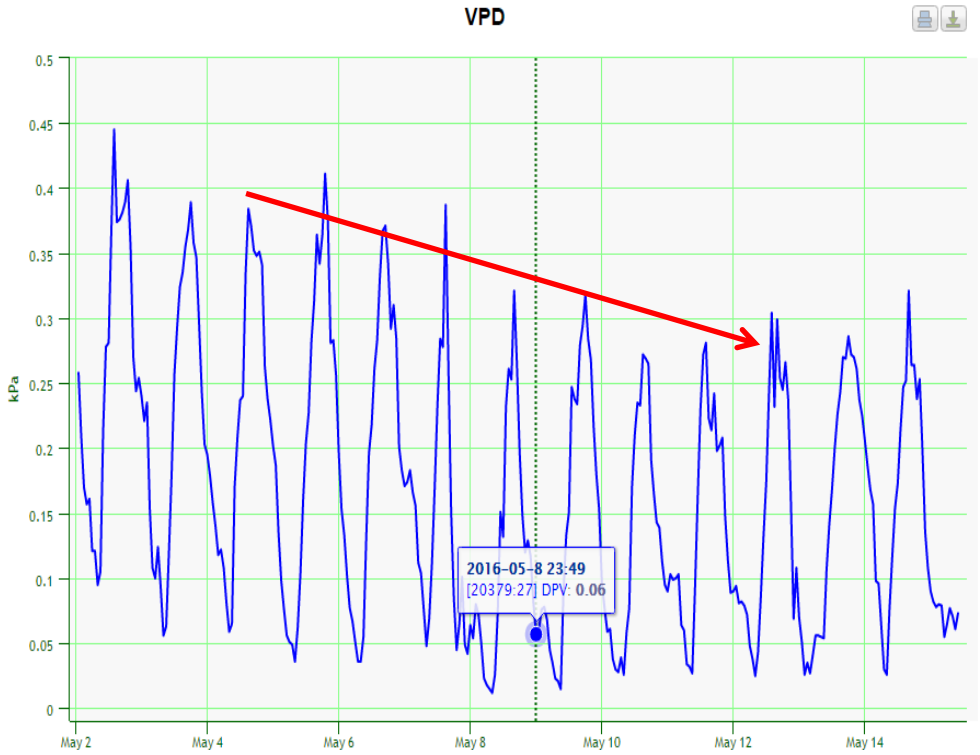
EXAMPLE OF NITRATE ACCUMULATIONS BY HIGH VPD WITHOUT CHANGING IRRIGATION

BLACK LINES THAT INDICATE VPD INCREASES CONDITION THE NITRATE CONCENTRATION INCREMENTS. EVERYTHING HAPPENS WITH SAME IRRIGATION IN THE PERIOD



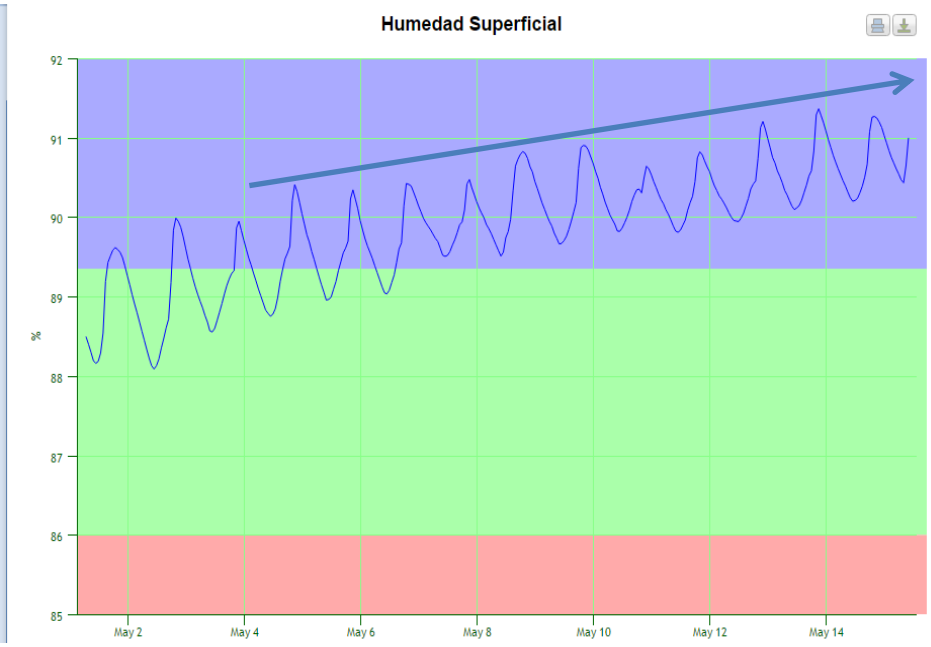
TEST IN MEXICO: PEPPER

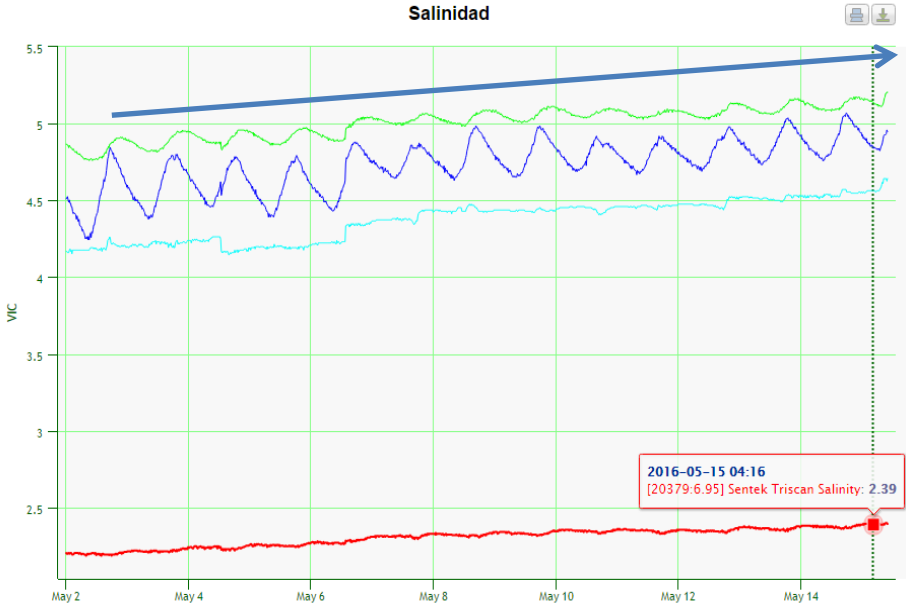
1. **WATER DEMAND**: **Less VPD** for several days: lower demand for water and nutrients. Perhaps the first fruit harvest does decrease nutrients and water demand and…



TEST IN MEXICO: PEPPER 2

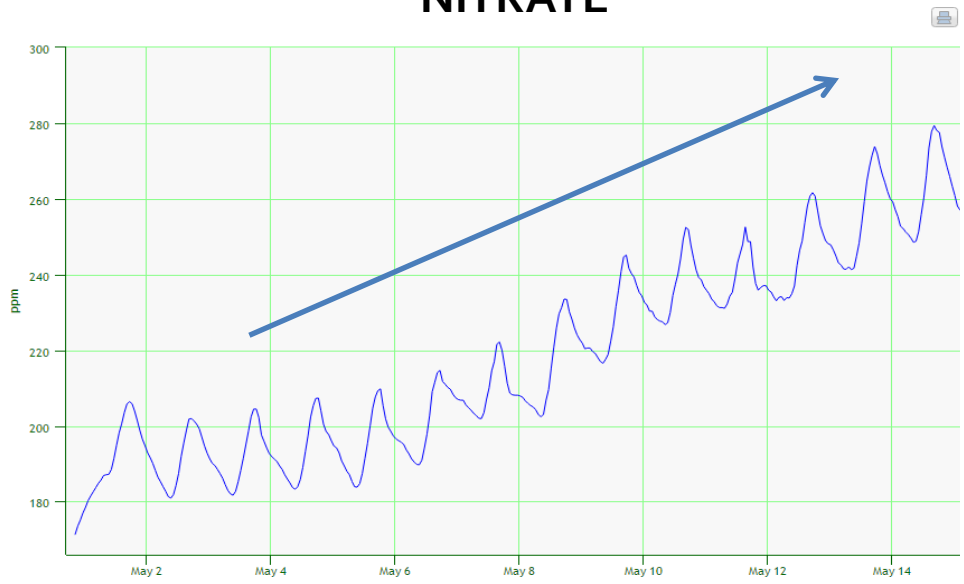
2. **The amount of irrigation is maintained and concentration of fertilizer too**: we detect an increase of water and conductivity in the soil

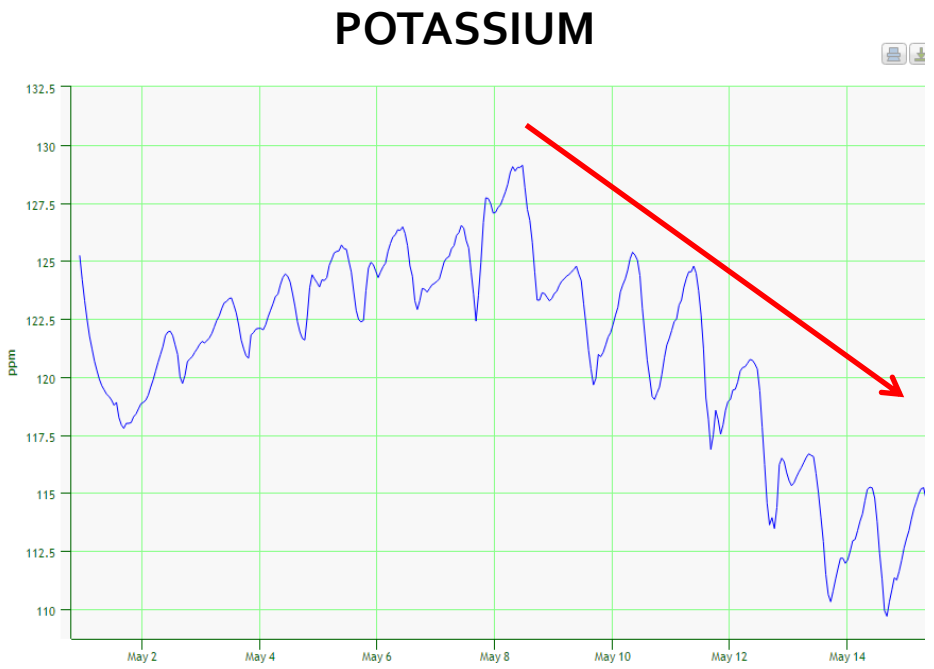




TEST IN MEXICO: CONSECUENCES

3. The amount of nitrate increases and the potassium decreases.

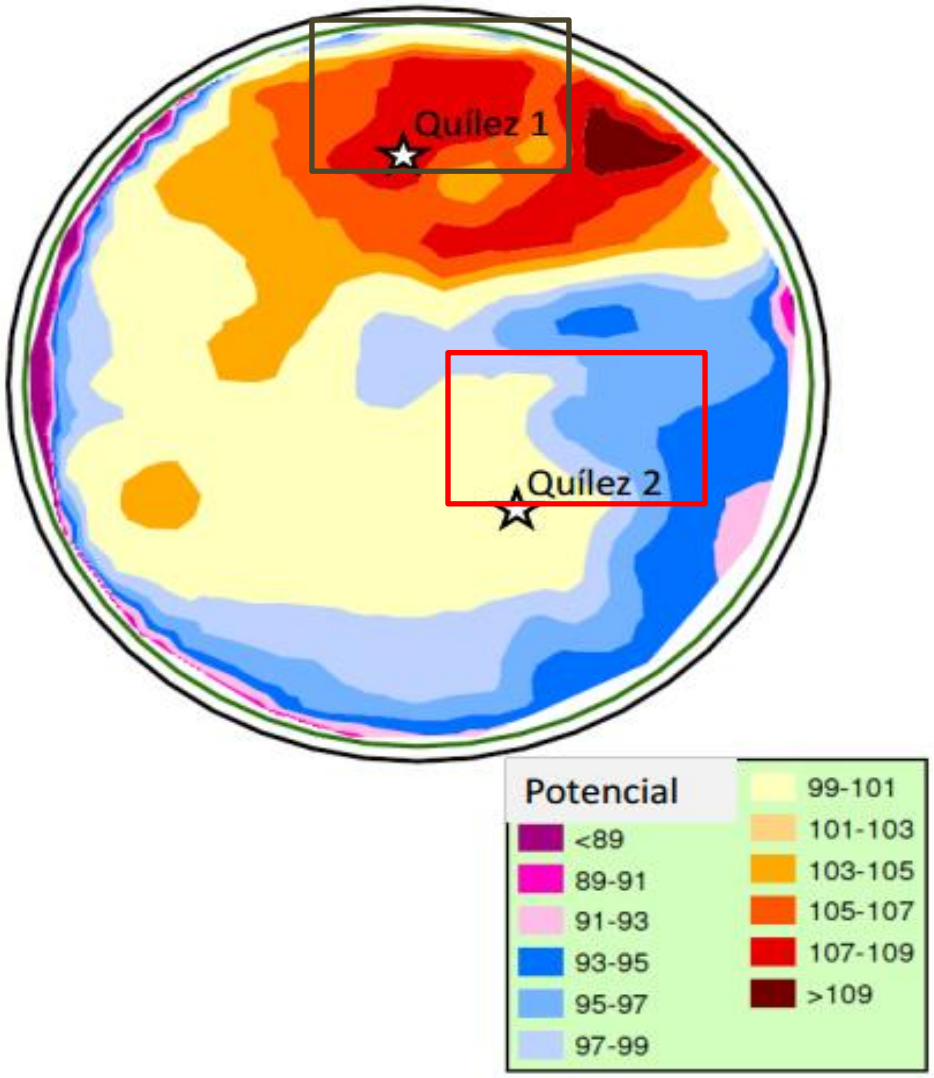




LEACHING TEST IN ALBACETE: WHEAT PRODUCTIVITY MAP

We have installed two points to control nitrate tendencies in the soil at 20cm and 60 cm.

One, **Quilez 2, a sandy soil,** is located in an average area (close to 100% of average productivity) and the other, **Quilez 1,a clay soil**, is in a more productive area (107-109%).

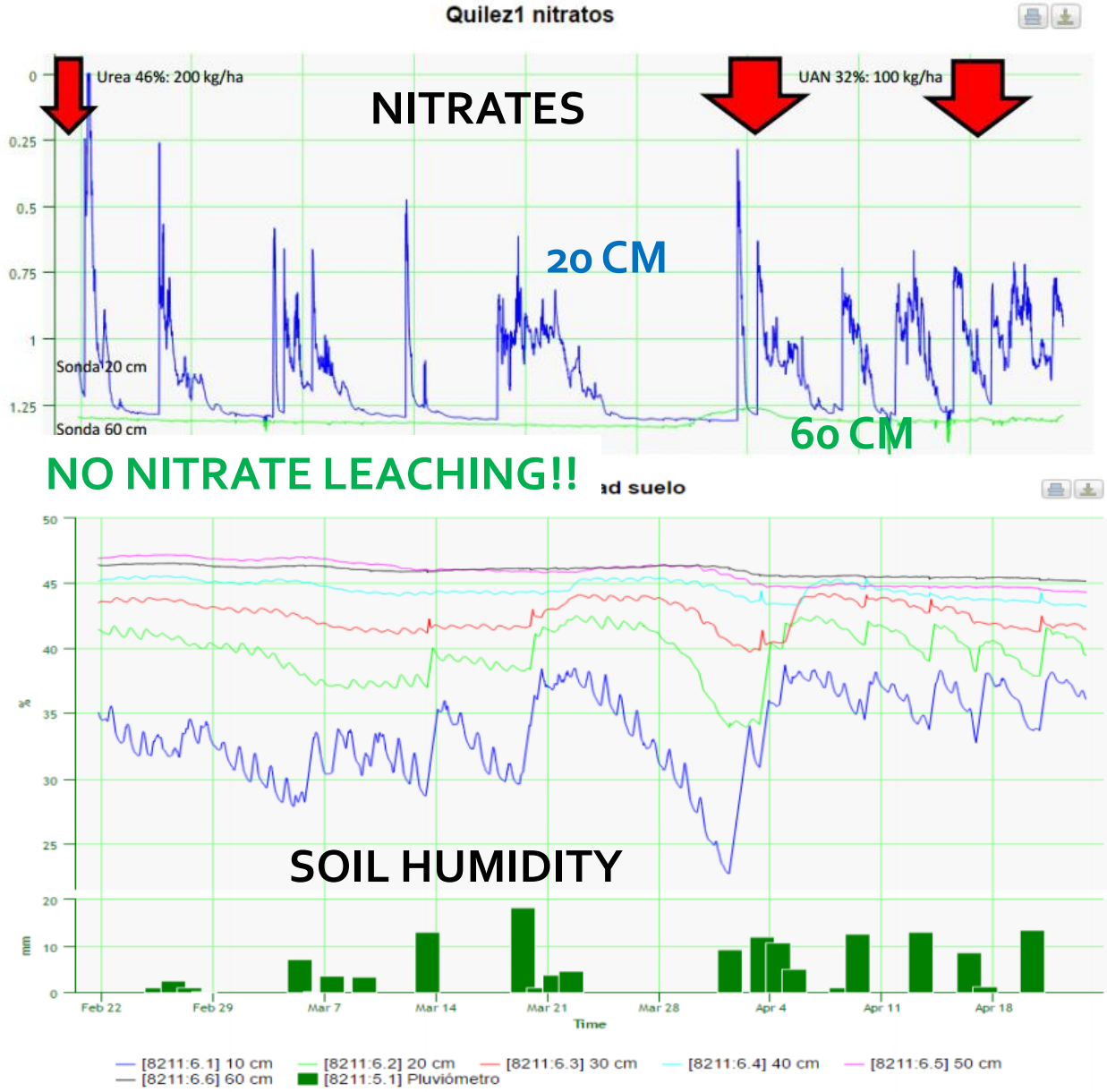


TEST IN ALBACETE: QUILEZ 1. CLAY SOIL (109% OF PRODUCTIVITY)

There are 3 urea aplications with pivot irrigation. They are not using urea in every irrigation, only once or less per week.

In **red arrow** urea aplications

Nitrate sensors: **blue** 20 cm and **green** 60 cm

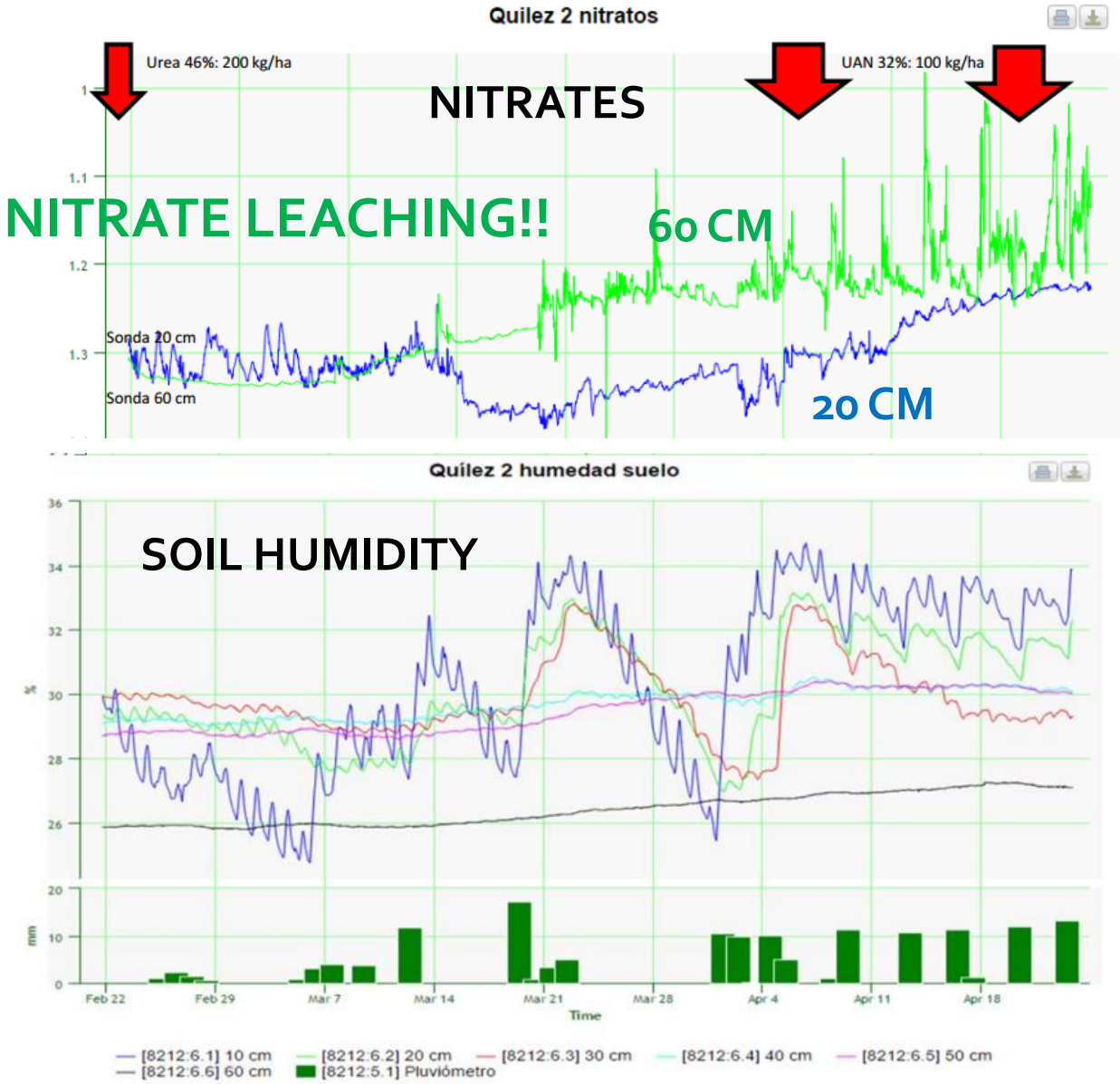


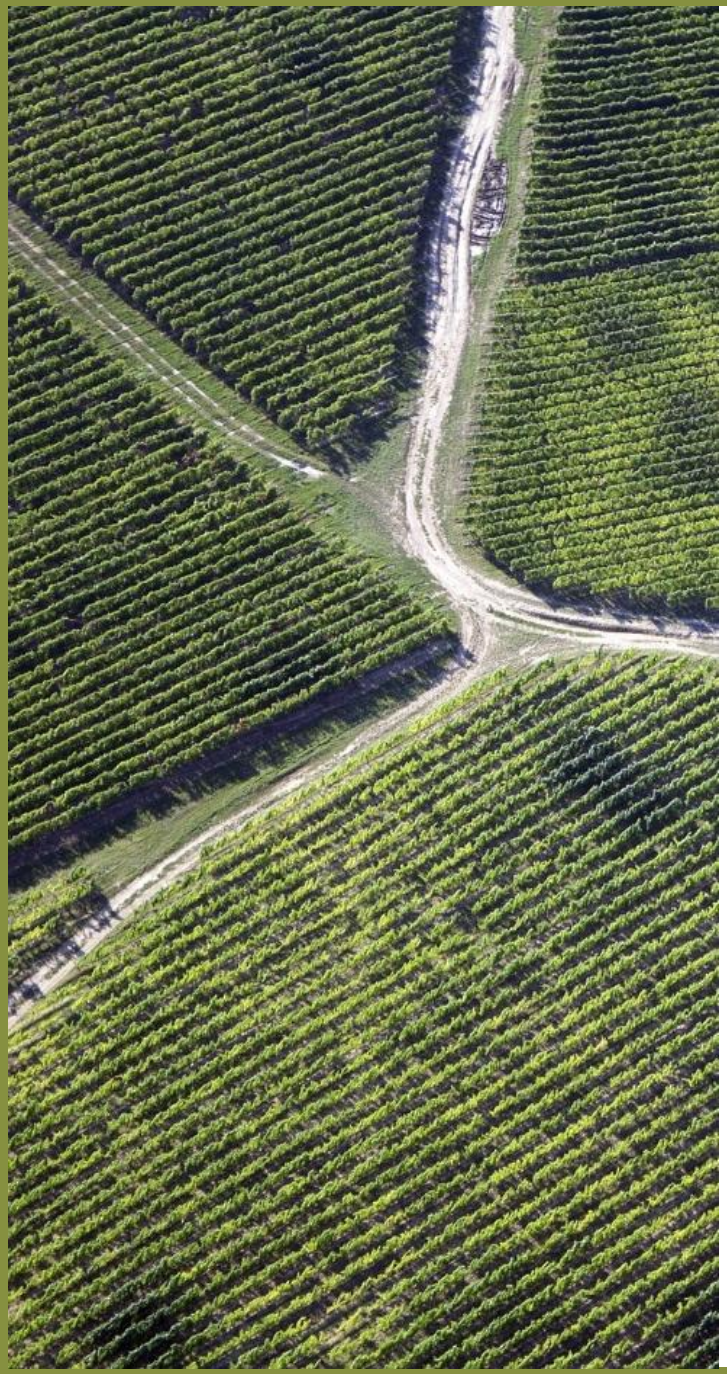
TEST IN ALBACETE: QUILEZ 2. SANDY SOIL (100% OF PRODUCTIVITY)

There are 3 urea aplications with pivot irrigation. They are not using urea in every irrigation, only once or less per week.

In **red arrow** urea aplications

Nitrate sensors: **blue** 20 cm and **green** 60 cm





ABOUT US

VERDE SMART CO.

- 15 years of experience in smart agriculture.
- It has experience in sensors with its patented plant sensor Plantsens.
- It has developed the most advanced software that integrates data from sensors, remote sensing, field data
- It has the spanish and international sales channels for the marketing of the sensor.
- Offer other complementary services (remote sensig, weather forecast that learns from farms microclimate and training)


Thank you