# OENOSMART – Tuscany Living Lab on AgriSmart Digital Platform
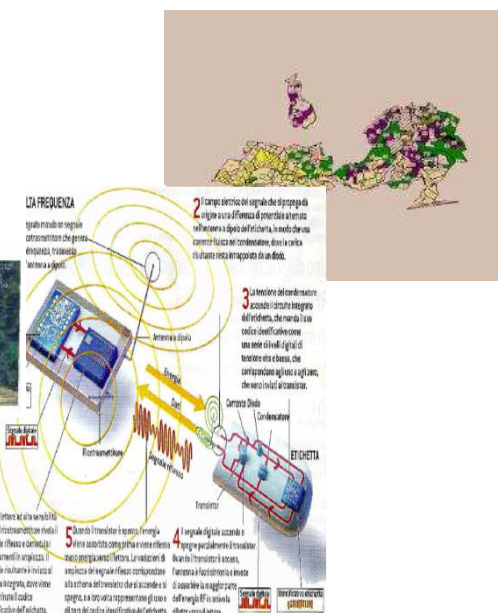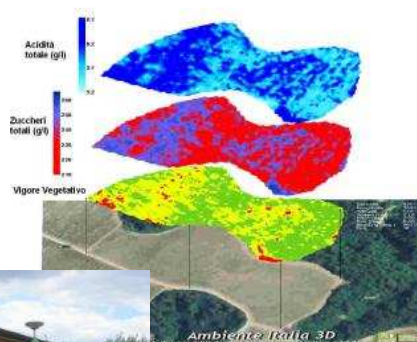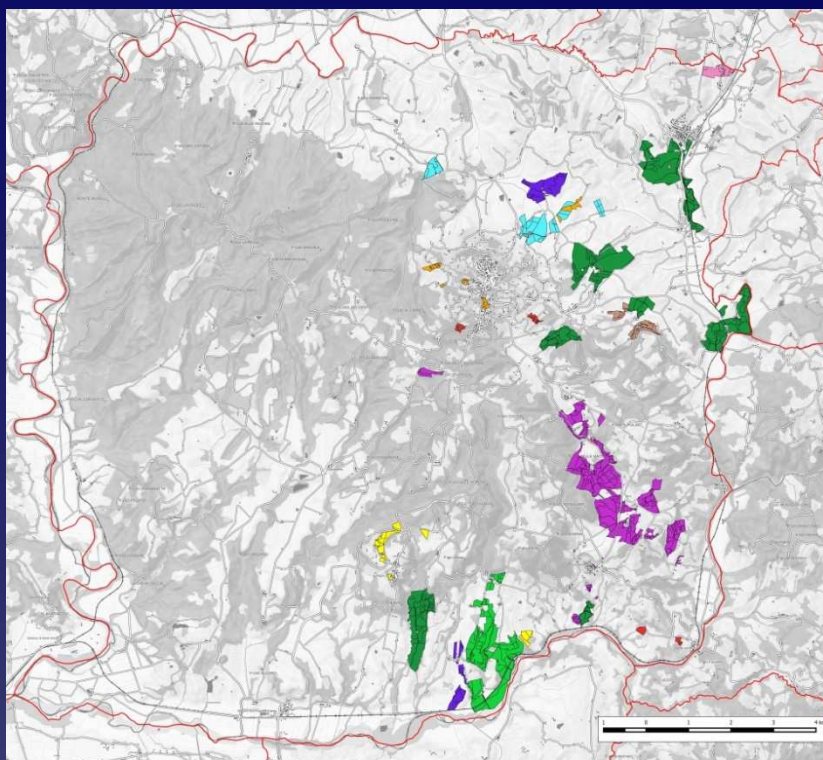
# TERRITORIAL DIGITAL PLATFORM AND DIRECT PARTICIPATING COMPANIES

| Farmers | Vineyards [ha] | Olive growing [ha] |
|---|---|---|
| Az. Agr. Casanova di Neri di Giacomo Neri | 72,3 | 7,1 |
| Az. Agr. Martoccia di Brunelli Luca | 8,3 | 1,4 |
| Az. Agr. Podere La Vigna di Rubegni Adriano | 6,4 | 1,1 |
| Az. Agr. San Filippo di R. Giannelli | 9,4 | 0,7 |
| Siro Pacenti di Pacenti Giancarlo | 23,1 | 3,6 |
| Soc. Agr. Canalicchio di Sopra di Ripaccioli Marco & F.lli s.s. | 19,1 | 2,3 |
| Talenti Riccardo | 14,9 | 3,6 |
| Tassi di Franci Franca | 5,2 | 0,3 |
| Tenuta di Sesta di Ciacci Giovanni | 36,5 | 22,9 |
| Tenuta Fanti di Fanti Baldassarre Filippo | 51,4 | 36,4 |

# System Architecture

## Monitoring

- *Aerial surveys:*
    - RGB Camera
    - Multispectral camera
    - Hyperspettral Camera
    - Gamma rays

- **Data collections on *crops*:**
    - Physiological measurements
    - Vigour indexes NDVI - NDRE

- **Data collection on *soil* :**
    - Conductivity measurements with electromagnetic induction
    - Profiles and drills
    - Laboratory analysis
- **Data collection from *weather stations*:**
    - **Atmospheric pressure**
    - **Temperature**
    - **Rainfall**
    - **Humidity of the area**
    - **Wind intensity**
    - **Solar radiation**
    - **Dew point**
    - **Leaf wetness**

## Data processing

**BRUNELLO OENO SMART**
ALTA QUALITÀ SOSTENIBILE

*Piattaforma territoriale multi-servizi per la DIGITAL AGRICULTURE*

## Field activities

## Services to companies and stakeholders

- **Digital maps for the management of parcels with 1 sqm mesh:**
    - Orthophoto (4 cm / pixel)
    - Vegetational maps and NDVI
    - Pedological maps
    - Hydrological modeling:
        - Water at field capacity (FC)
        - Water at the point of withering (WP)
        - Water available for plants (AWC)
        - Saturated hydraulic permeability (Ksat)
    - Weather-weather maps
    - Prescription maps
- **Telemetry control of operations**
- **Field books**
- **DSS Services - Decision Support System for:**
    - Crop protection alarms
    - Logistic decisions support for the collection of products
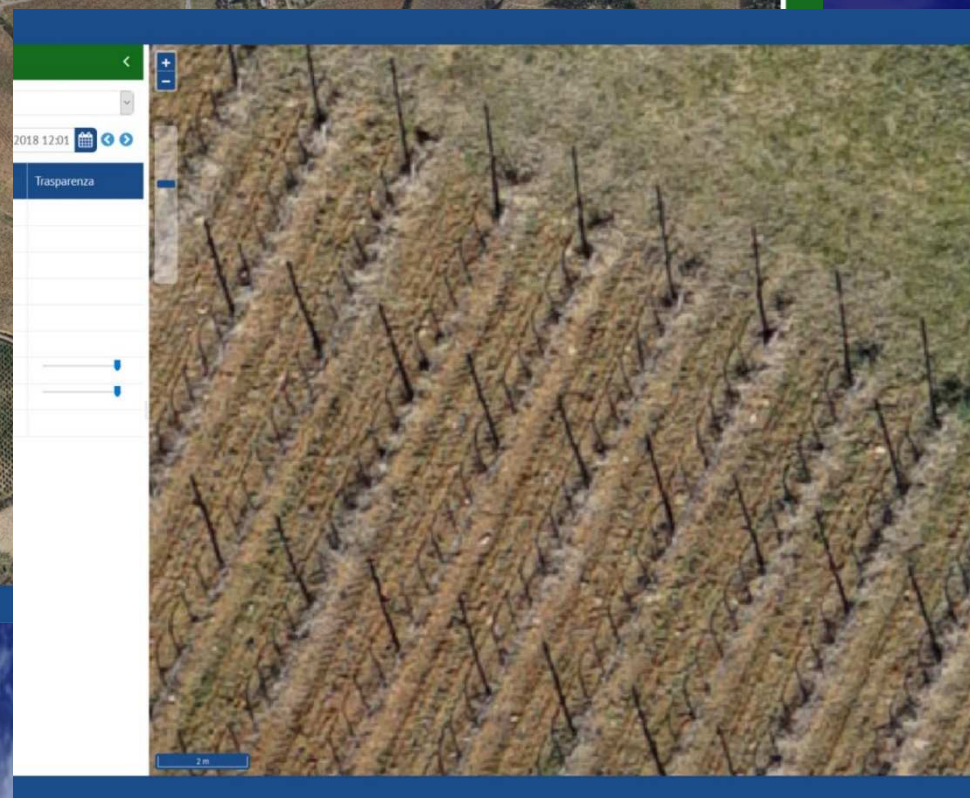- **Analytical accounting of georeferenced parcel**
- **Traceability**
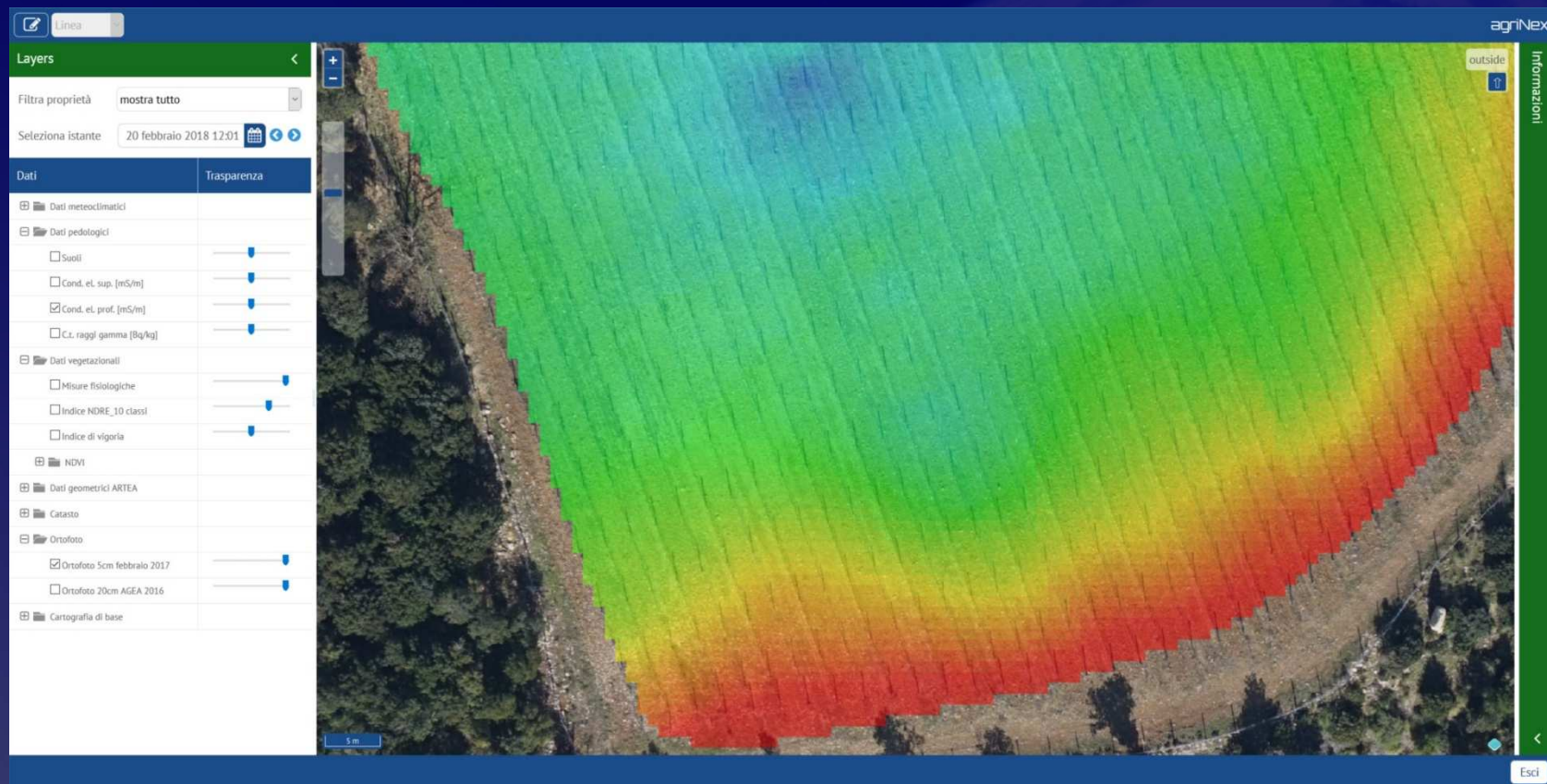- **Typicality**
- **Identification of biodiversity footprints**
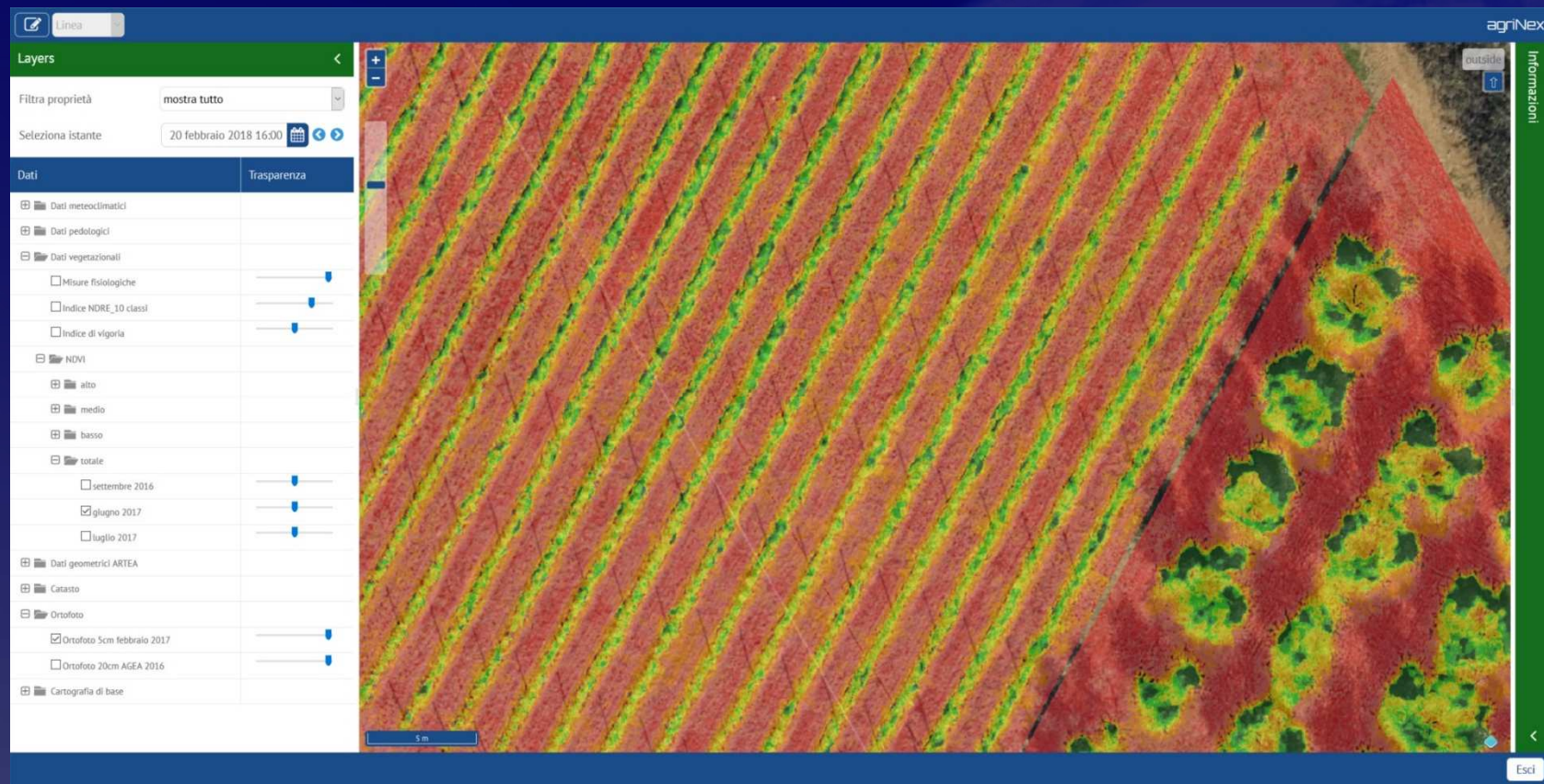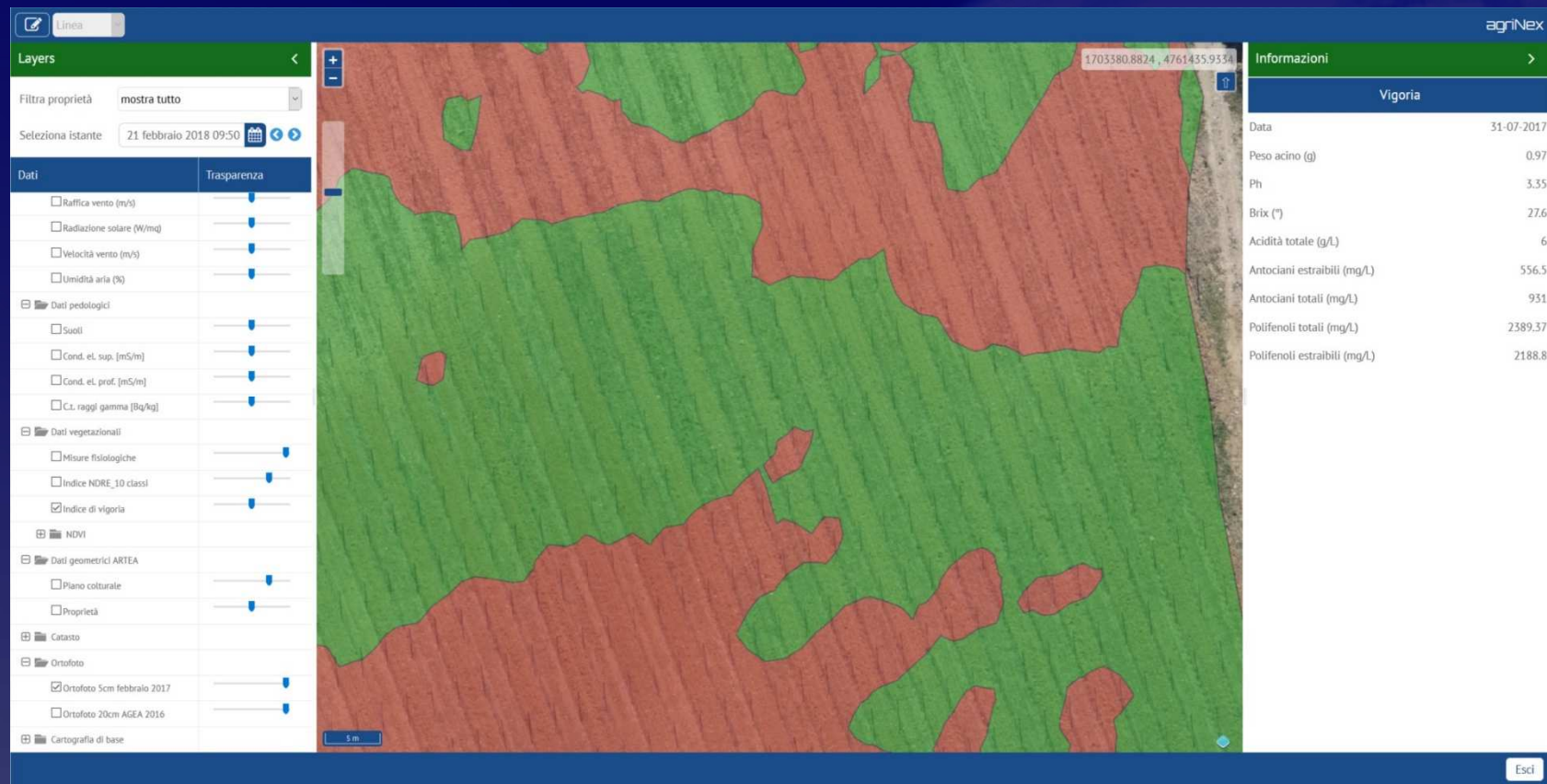
# ORTOPHOTO

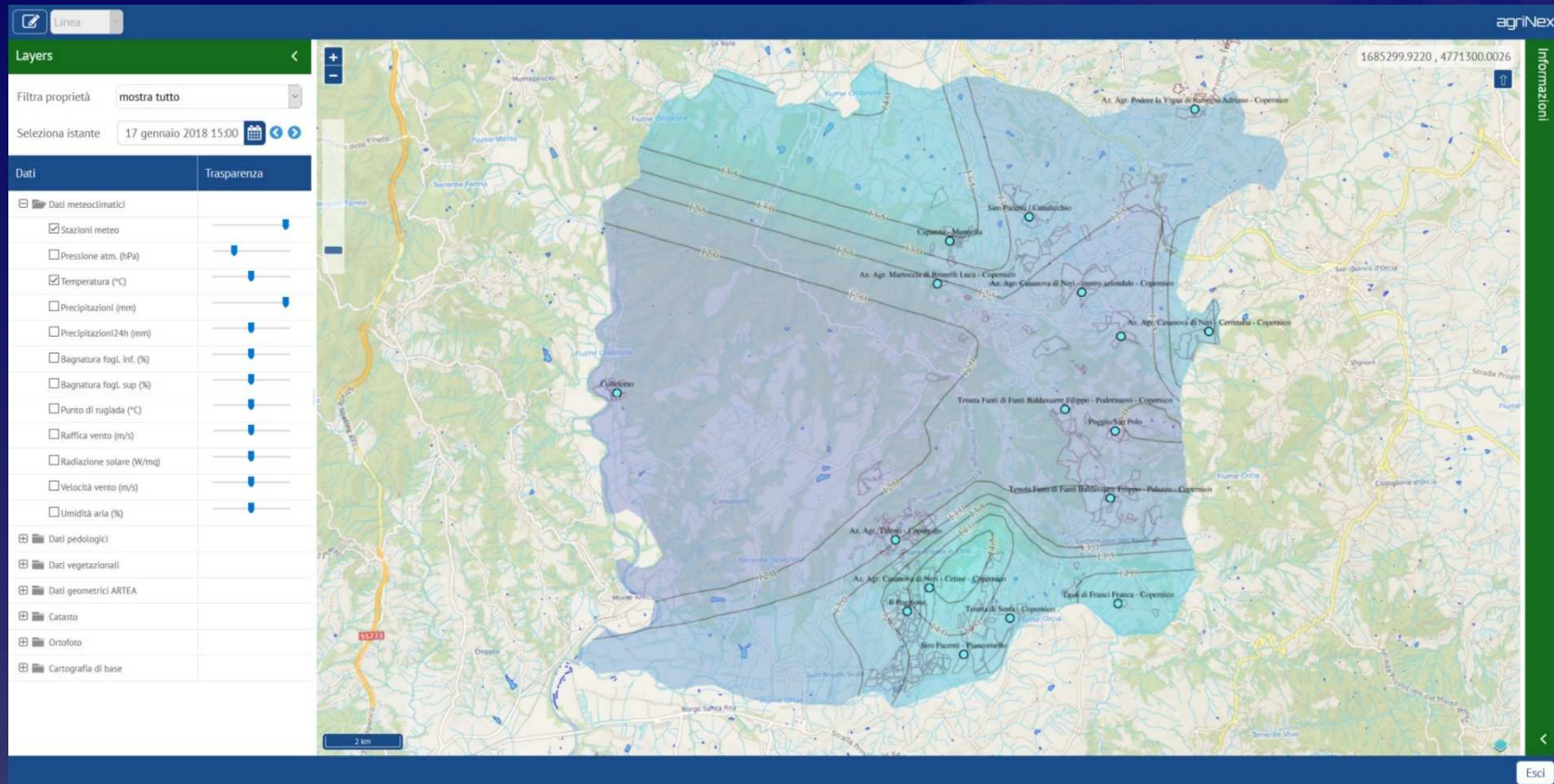# PEDOLOGICAL MAPS

# PEDOLOGICAL MAPS and SOIL ZONING
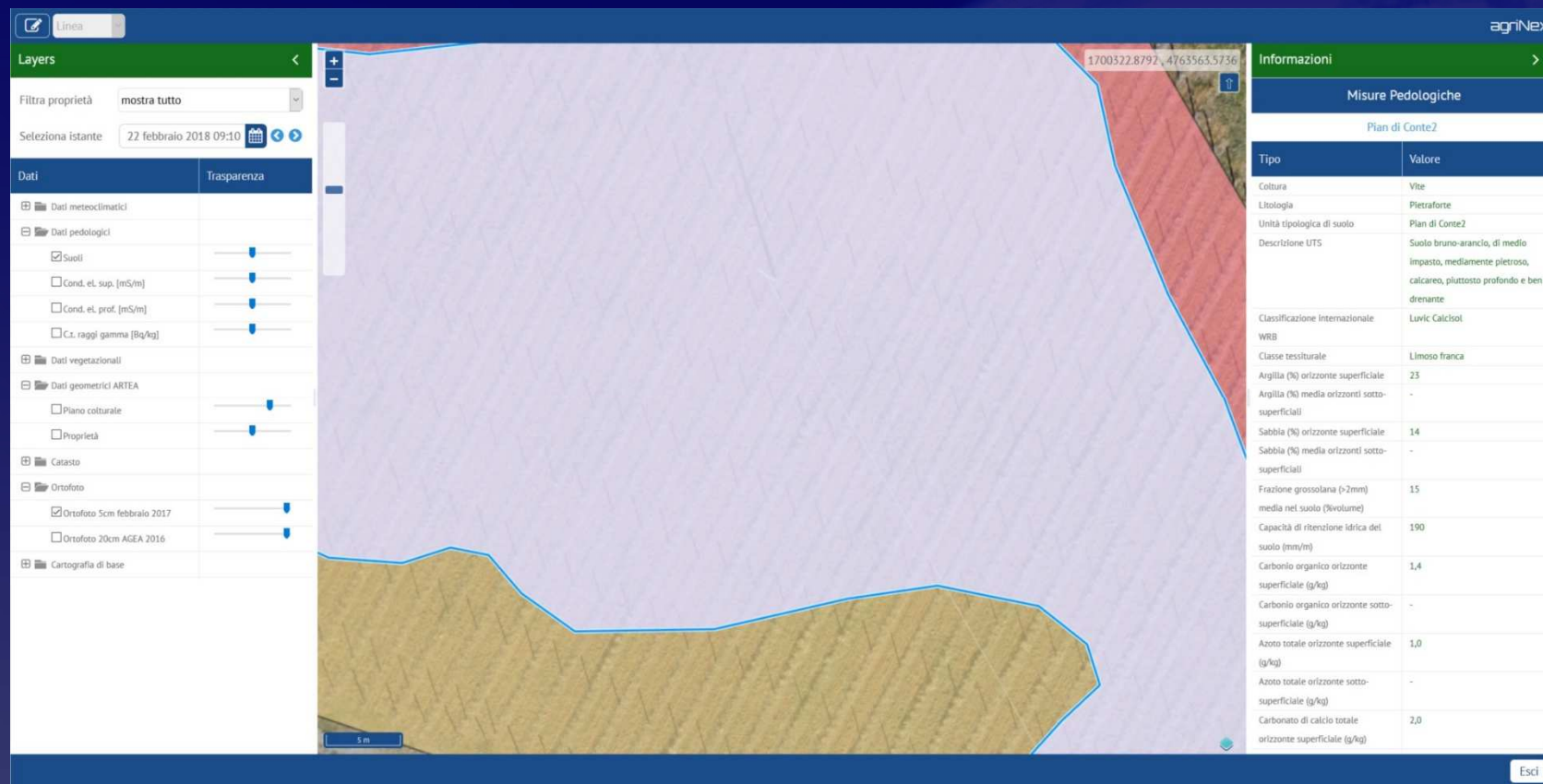
# CROP VIGOUR INDEXING NDVI-NDRE
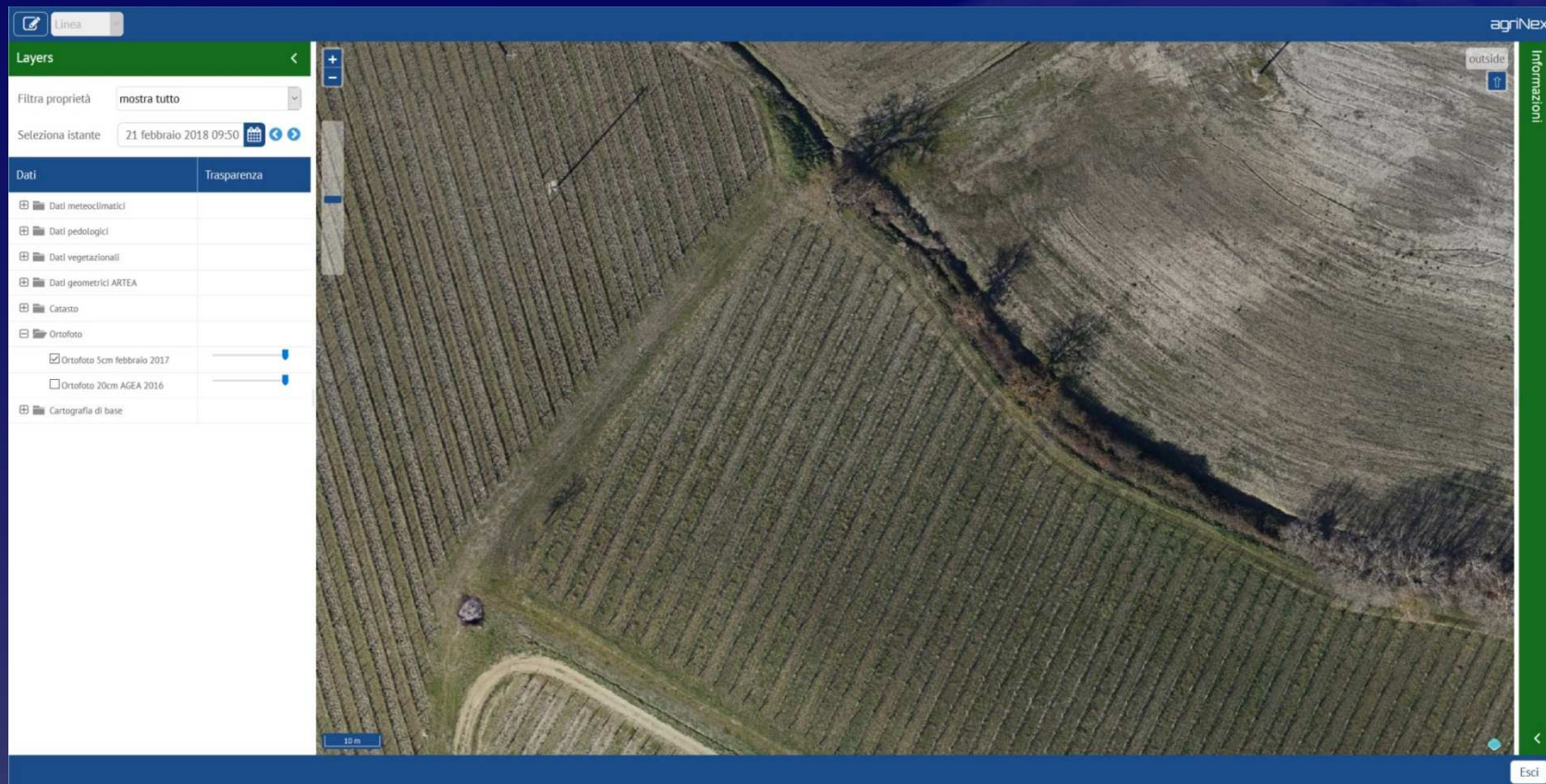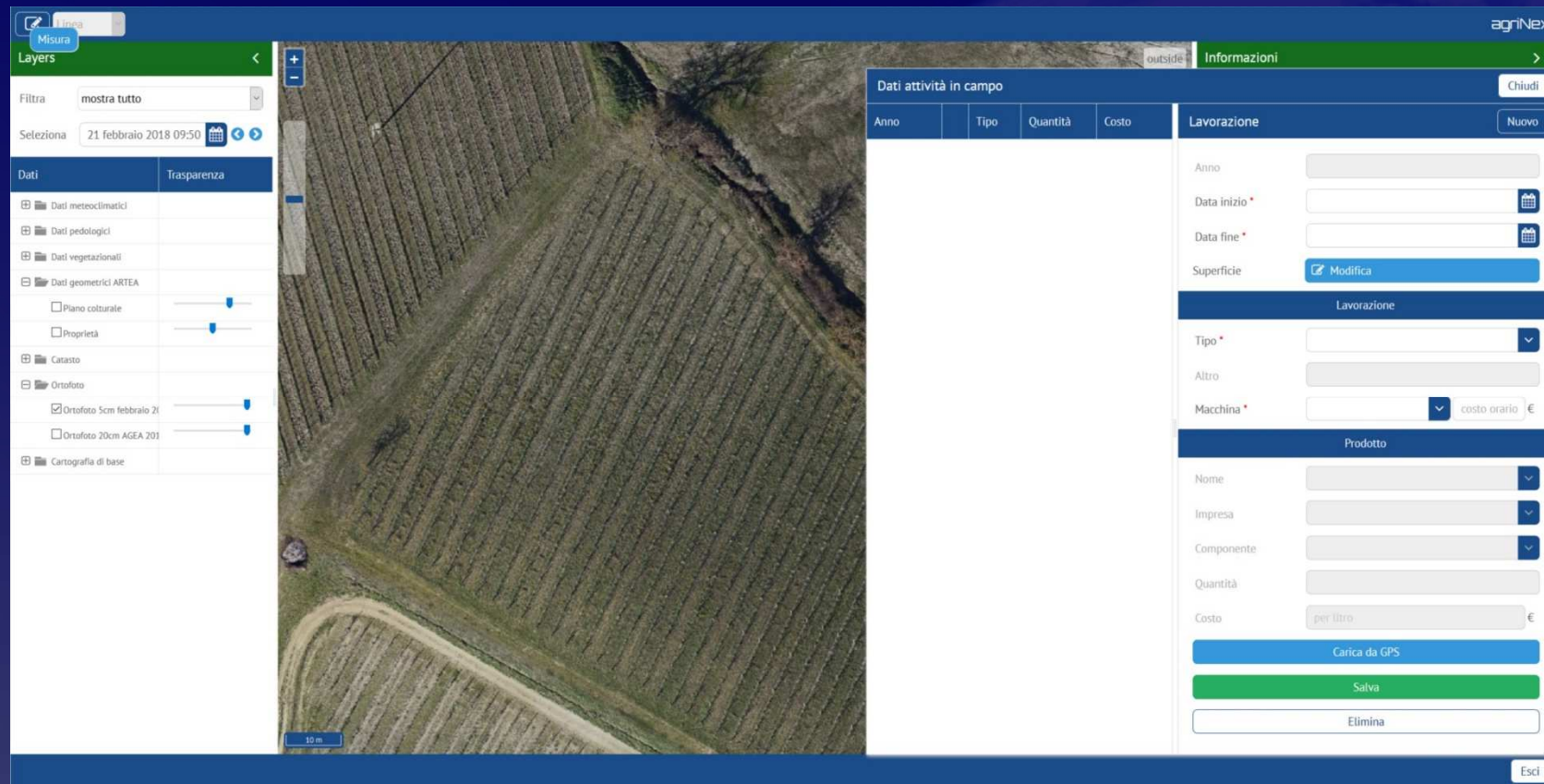
# CLUSTER VIGOUR MAPS

# WEATHER-CLIMATE MAPS

# VINEYARDS - FIELD ACTIVITIES

# VINEYARDS – DATA ON FIELD ACTIVITIES

# VINEYARDS – DATA ON FIELD ACTIVITIES

# VINEYARDS – DATA ON FIELD ACTIVITIES

# ARTEA DATA – PIANO COLTURALE

# DATA ARTEA – PLOT OUTLINING
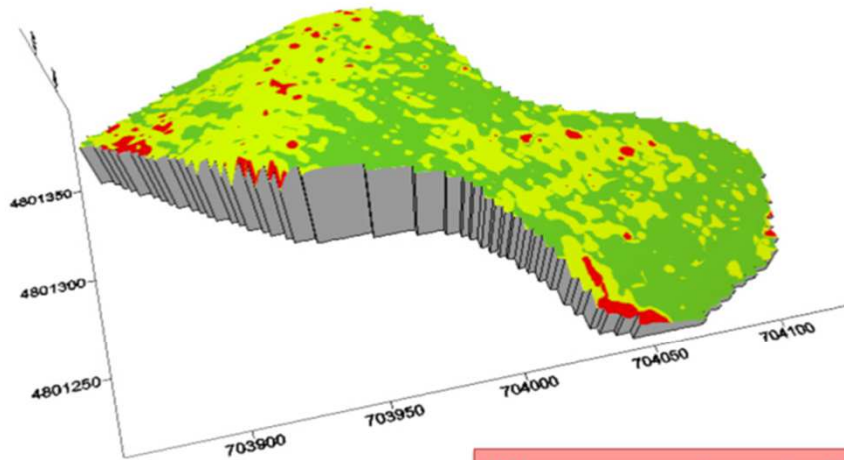
# To manage sustainability and quality in an high value chain
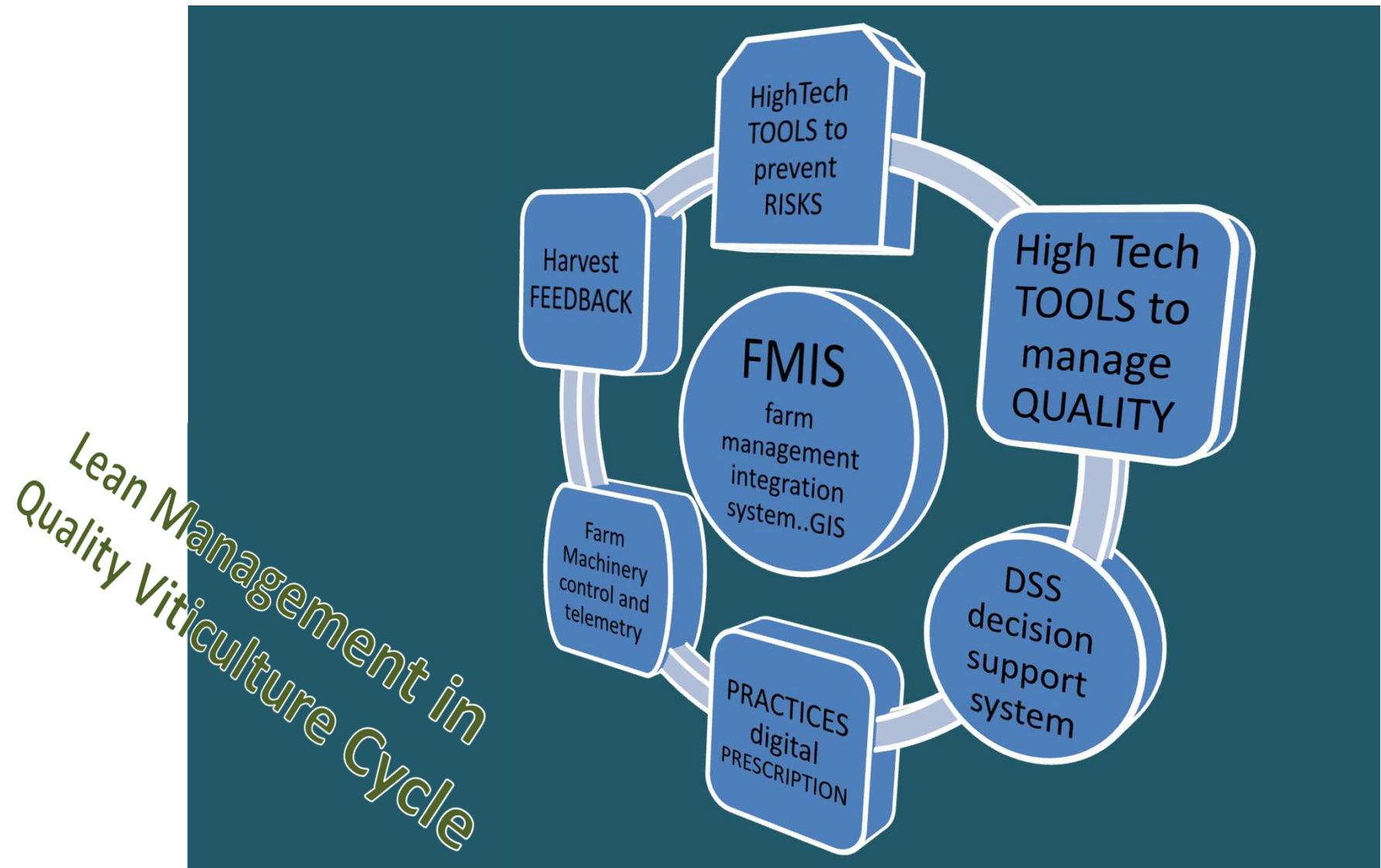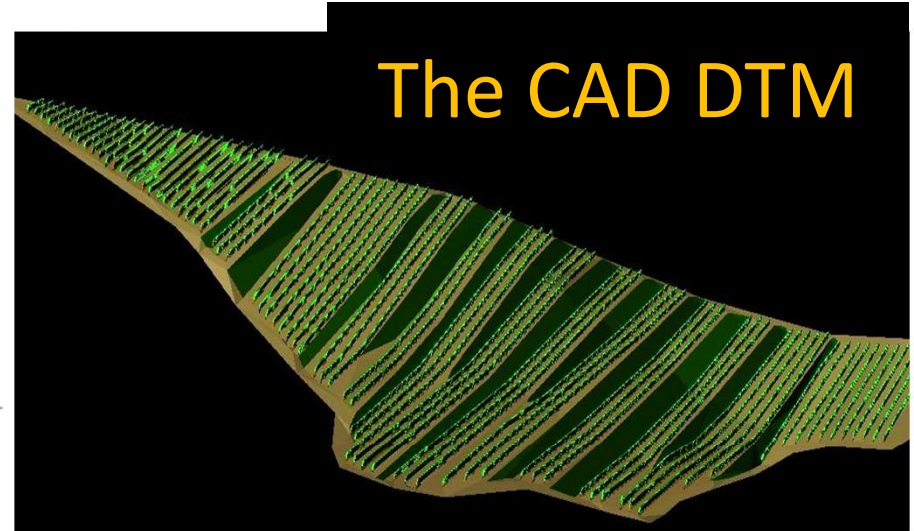
Overlay Dem + Countour map

The CAD DTM
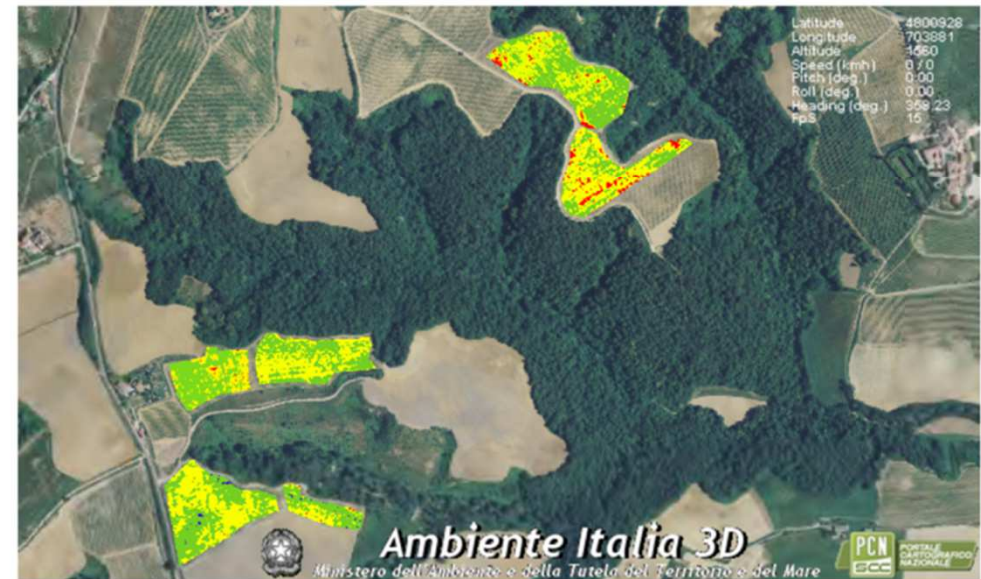
if the maps are not organized into an overall project are unnecessary

Overlay general air photos

Ambiente Italia 3D
Ministero dell'Ambiente e della Tutela del Territorio e del Mare
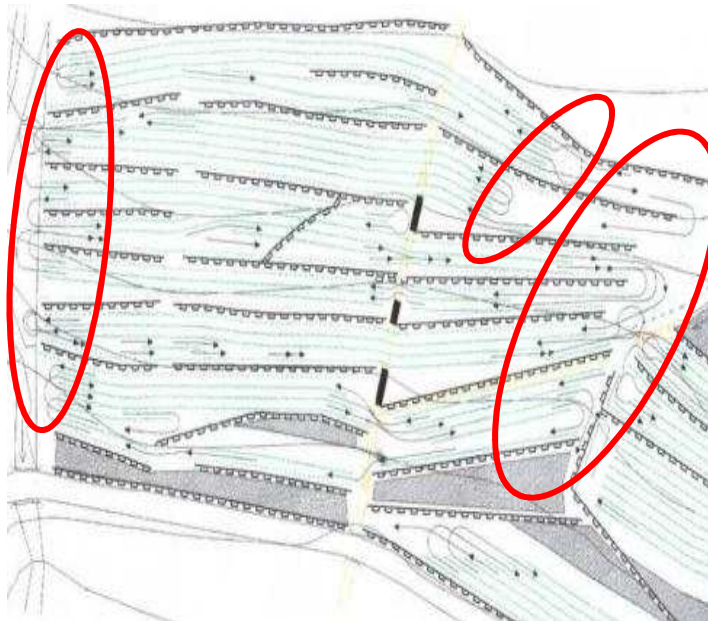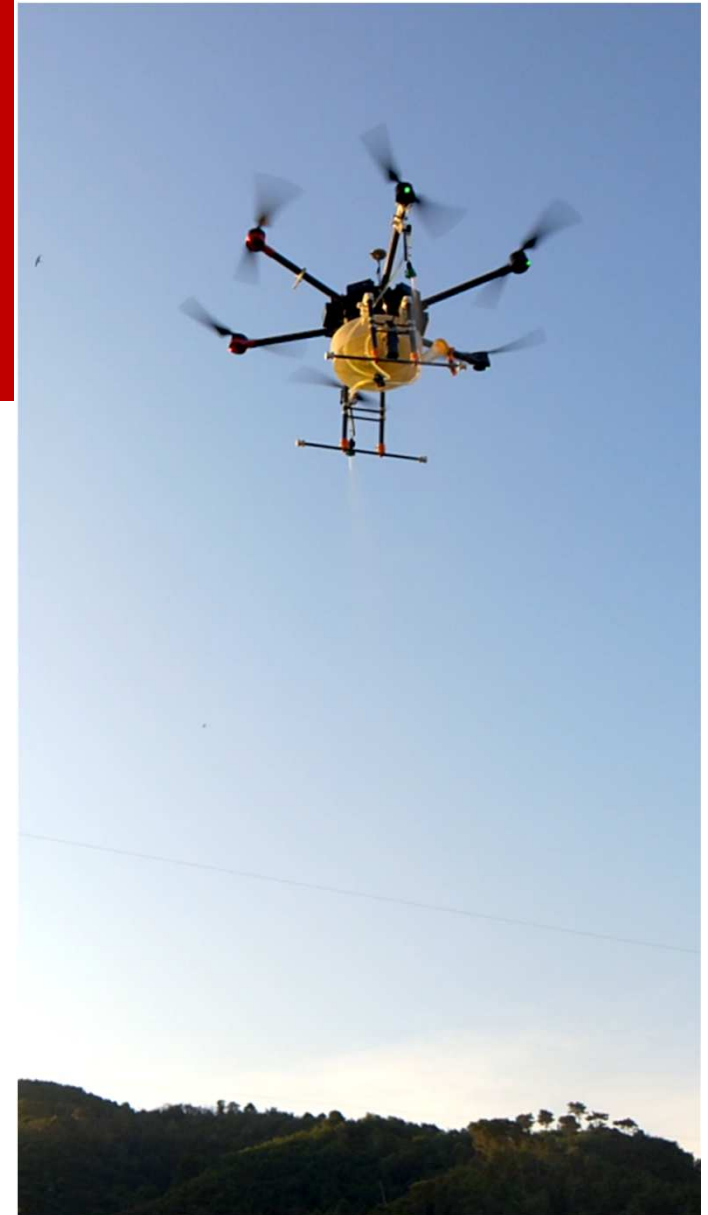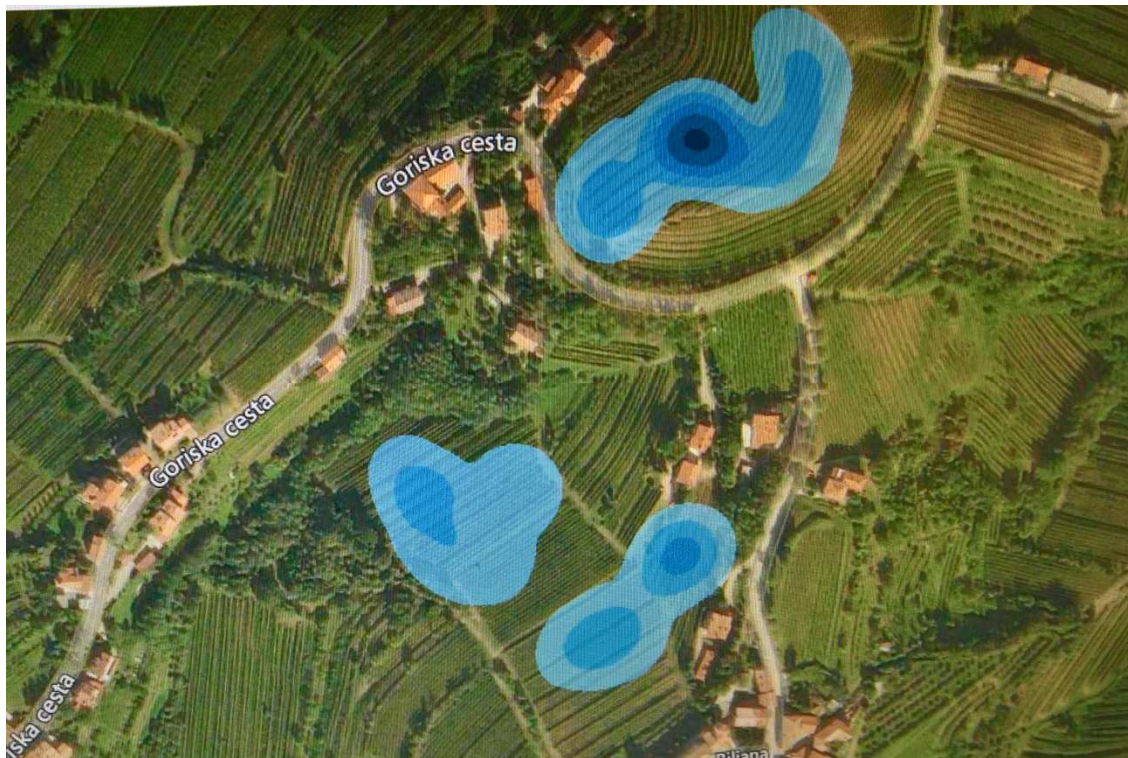
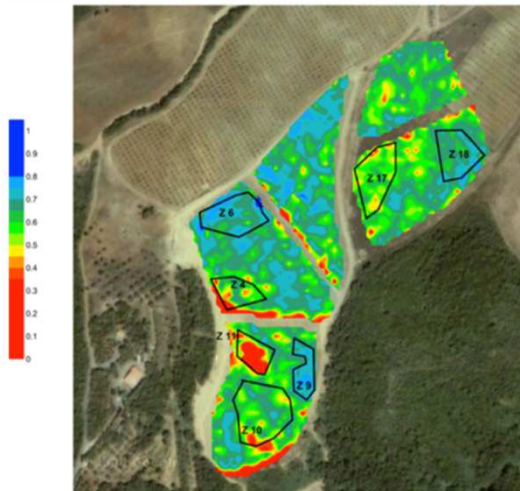**To ADD INFORMATIONS INTO A FARM SYSTEM MANAGEMENT**

**INTELLIGENT ARMS**
Experiences in Tuscany  - VRT by drone
- Spraying nutrinets anche chemicals
- Pollinating
- launch of predators

# VRA technologies available



....nella pratica operativa??

- Progettazione e realizzazione nuovi impianti
- Gestione agronomica differenziata VRT
  - Fertilizzazioni
  - Defogliatura
  - Vendemmia
  - Trattamenti antiparassitari
  - Irrigazione
  - Tracciabilità
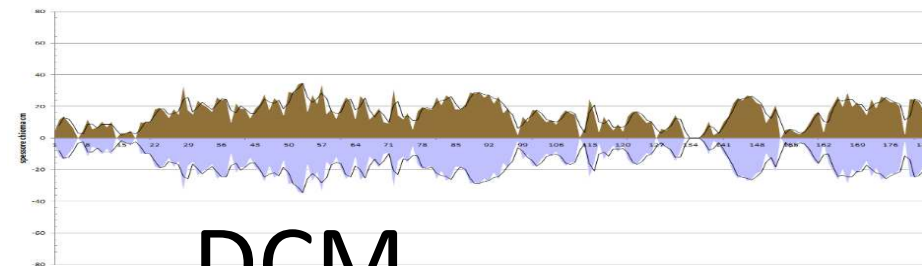  - Controllo flotte
  - Web-Gis gestionali aziendali

Giornata di studi | Milano 15/11/2013 I paradigmi della sostenibilità
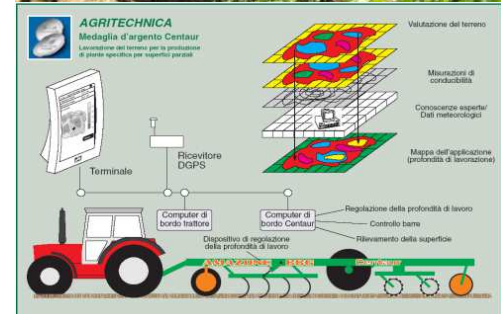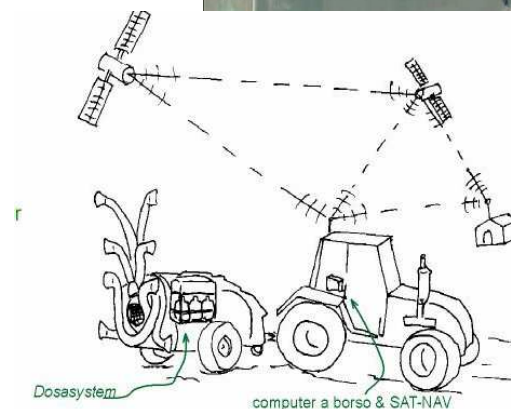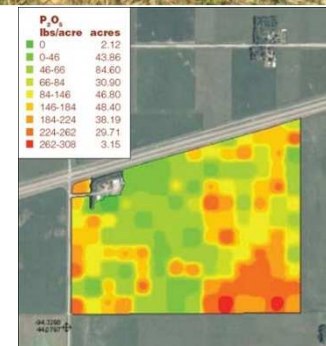
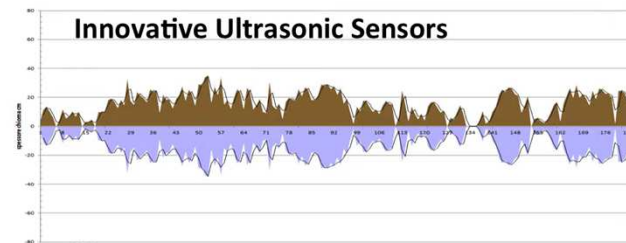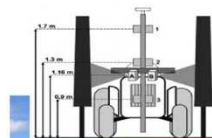perception systems for sustainable and protitable applications
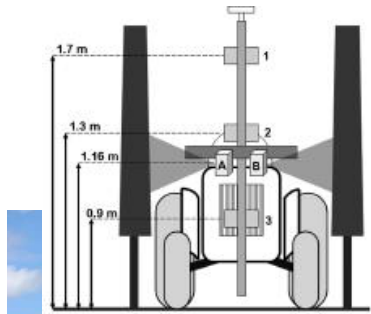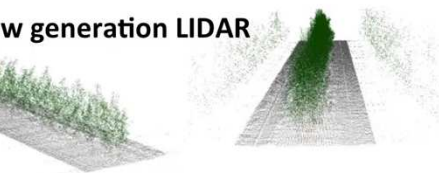
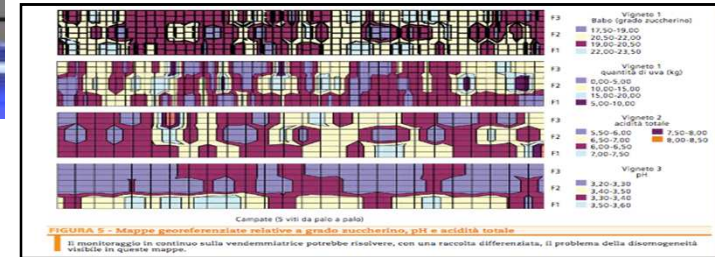VRA – CAS
canopy management and adaptation of treatment
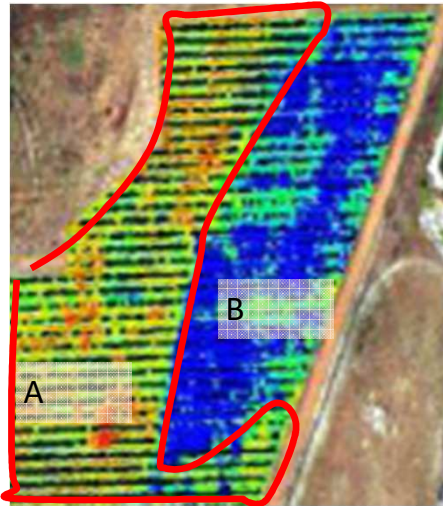
DCM

Innovative proximal perception systems

Innovative Ultrasonic Sensors

New generation LIDAR
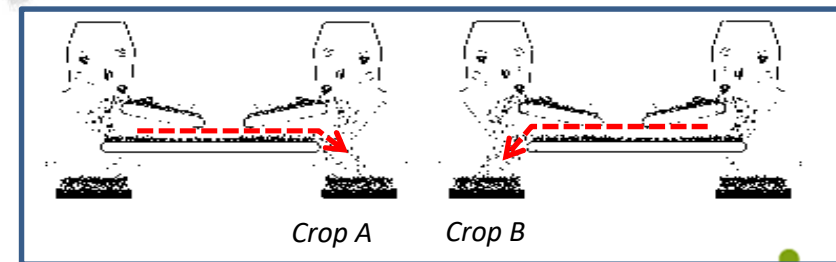
## Differential Harvesting



## Transversal conveyor

The map is loaded on USB flash drive for use in the HQS machine. Equipped with the GPS technology, the grape harvester knows its position and reads the map to determine A and B quality grape areas. Automatically, the harvester moves its conveyor to the right or to the left according to the map information.

*Crop A*    *Crop B*

SPARKLE

## Telemetry , Fleet control, DDS, Traceability in management
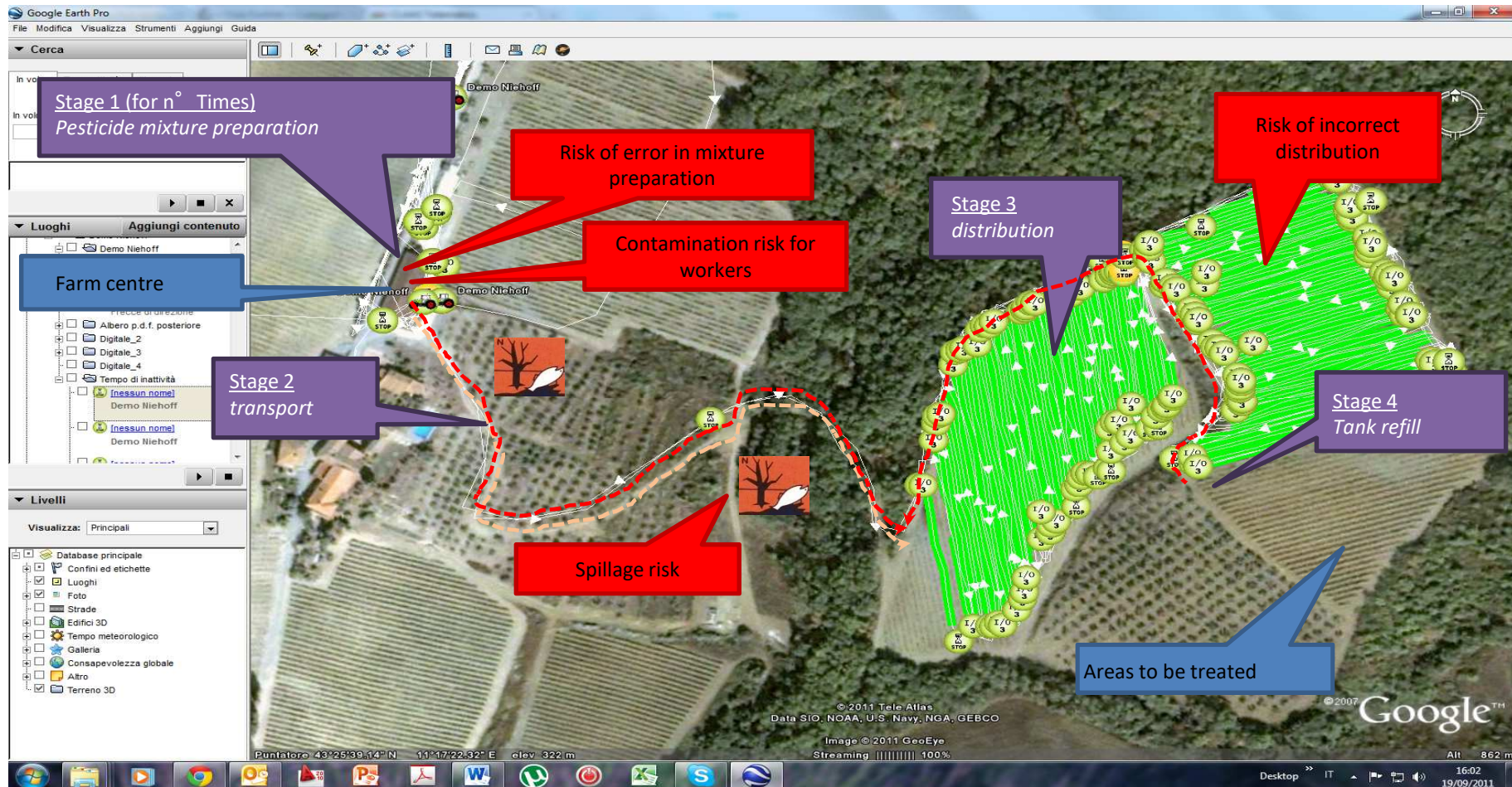
# Farm dashboard with on time emission and consumption indexes compared with conventional practices

on time emission and consumption indexes compared with conventional practices

36% LESS CHEMICAL APPLIED

26 % COST REDUCTION

38% WATER SAVING

Experience Azienda Marchesi Mazzei over 3 year

# Under the Regional approach to forter an efficient and inclusive ECOSYSTEM