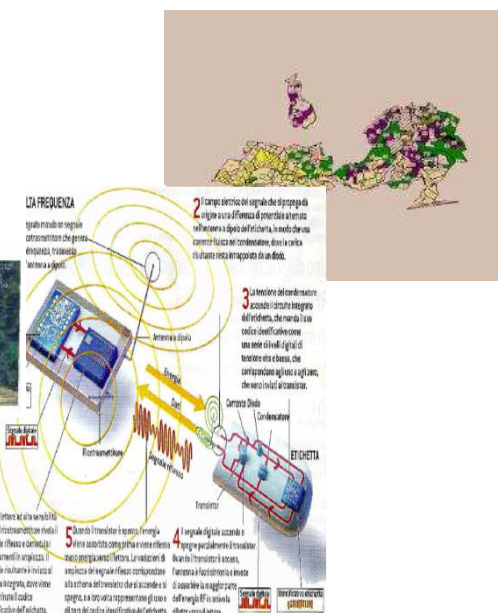
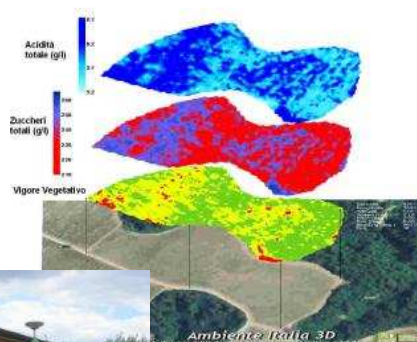


OENOSMART – Tuscany Living Lab on AgriSmart Digital Platform



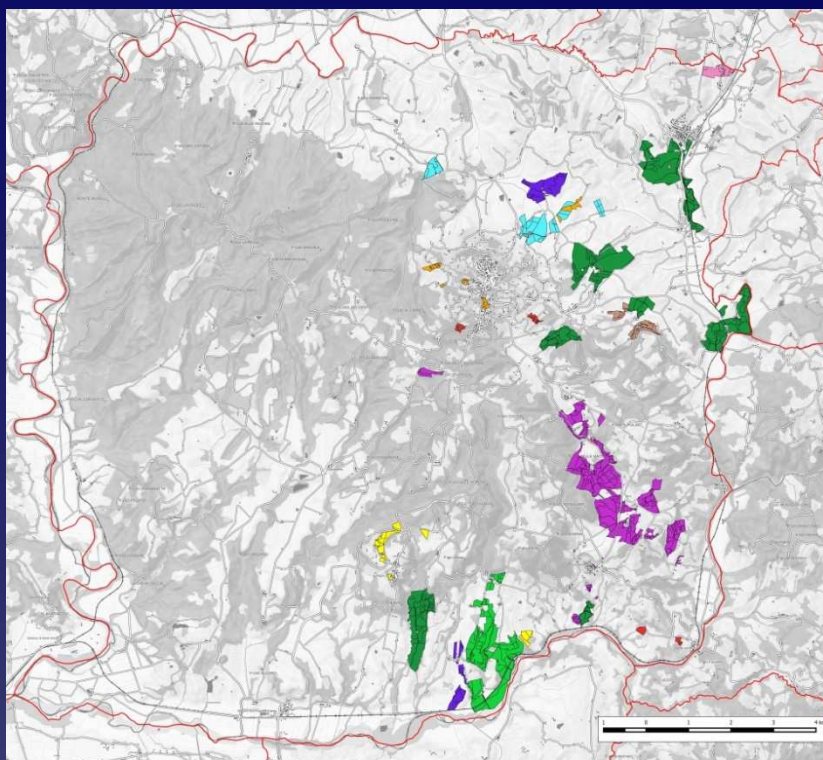
Regione Toscana



OENOSMART
2017 PIF FEASR FEAMP



TERRITORIAL DIGITAL PLATFORM AND DIRECT PARTICIPATING COMPANIES



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

System Architecture



Monitoring

Aerial surveys:

- RGB Camera
- Multispectral camera
- Hyperspectral 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



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

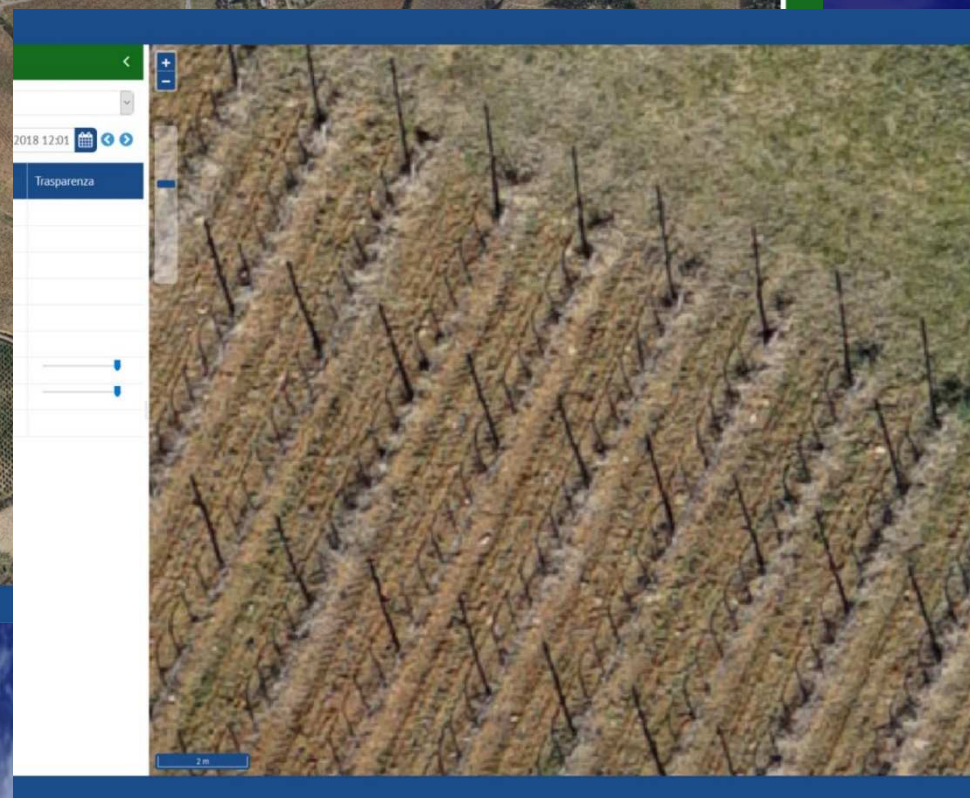
Identification of biodiversity footprints

ORTOPHOTO

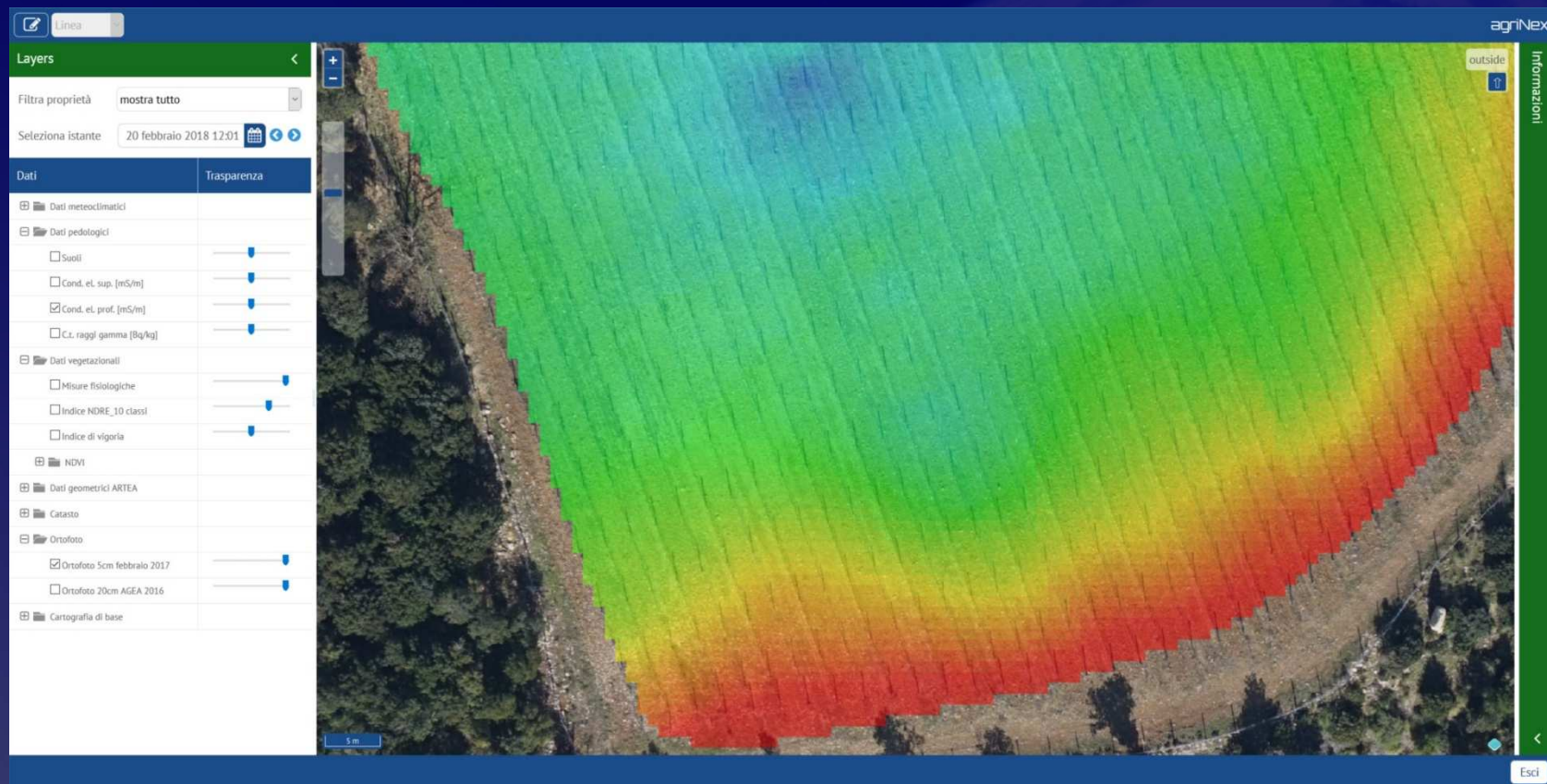
The screenshot displays the agriNex web application interface. The main view is an aerial orthophoto of a rural landscape with fields and a small settlement. On the left, a 'Layers' panel is visible, containing a search bar and a list of data layers with checkboxes and sliders for transparency. The 'Dati' section includes:

- Dati meteorologici**
 - ☒ Stazioni meteo
 - ☐ Pressione atm. (hPa)
 - ☐ Temperatura (°C)
 - ☐ Precipitazioni (mm)
 - ☐ Precipitazioni 24h (mm)
 - ☐ Bagnatura fogl. inf. (%)
 - ☐ Bagnatura fogl. sup. (%)
 - ☐ Punto di rugiada (°C)
 - ☐ Raffica vento (m/s)
 - ☐ Radiazione solare (W/mq)
 - ☐ Velocità vento (m/s)
 - ☐ Umidità aria (%)
- Dati pedologici**
- Dati vegetazionali**
- Dati geometrici ARTEA**
 - ☐ Piano coltivato
 - ☐ Proprietà
- Catasto**
- Ortofoto**
 - ☒ Ortofoto 5cm febbraio 2017
 - ☐ Ortofoto 20cm AGEA 2016

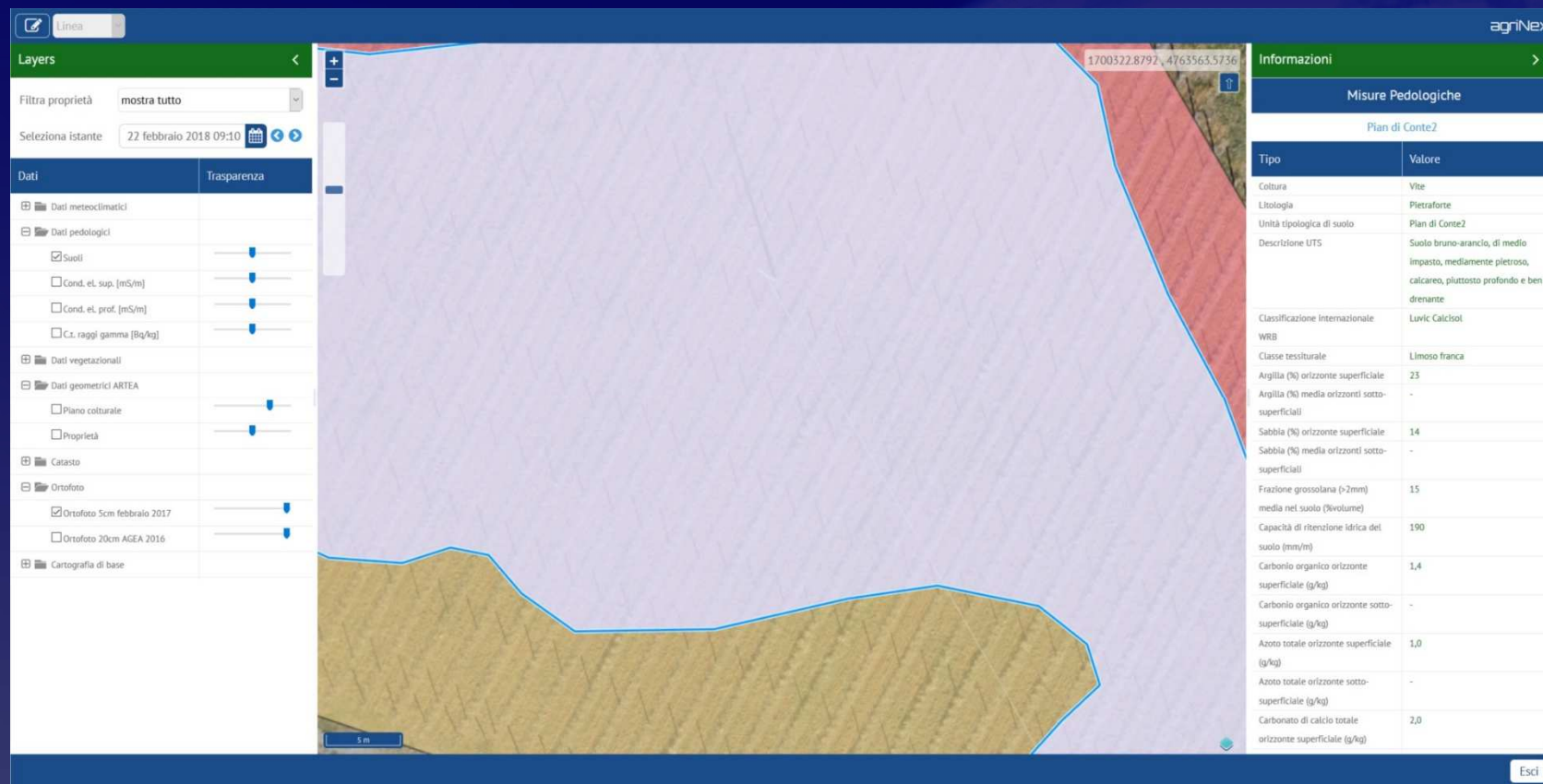
The 'Trasparenza' (Transparency) panel on the right allows adjusting the opacity of the selected layers. The top right corner shows the 'agriNex' logo and an 'outside' button. A scale bar at the bottom left indicates 100 m.



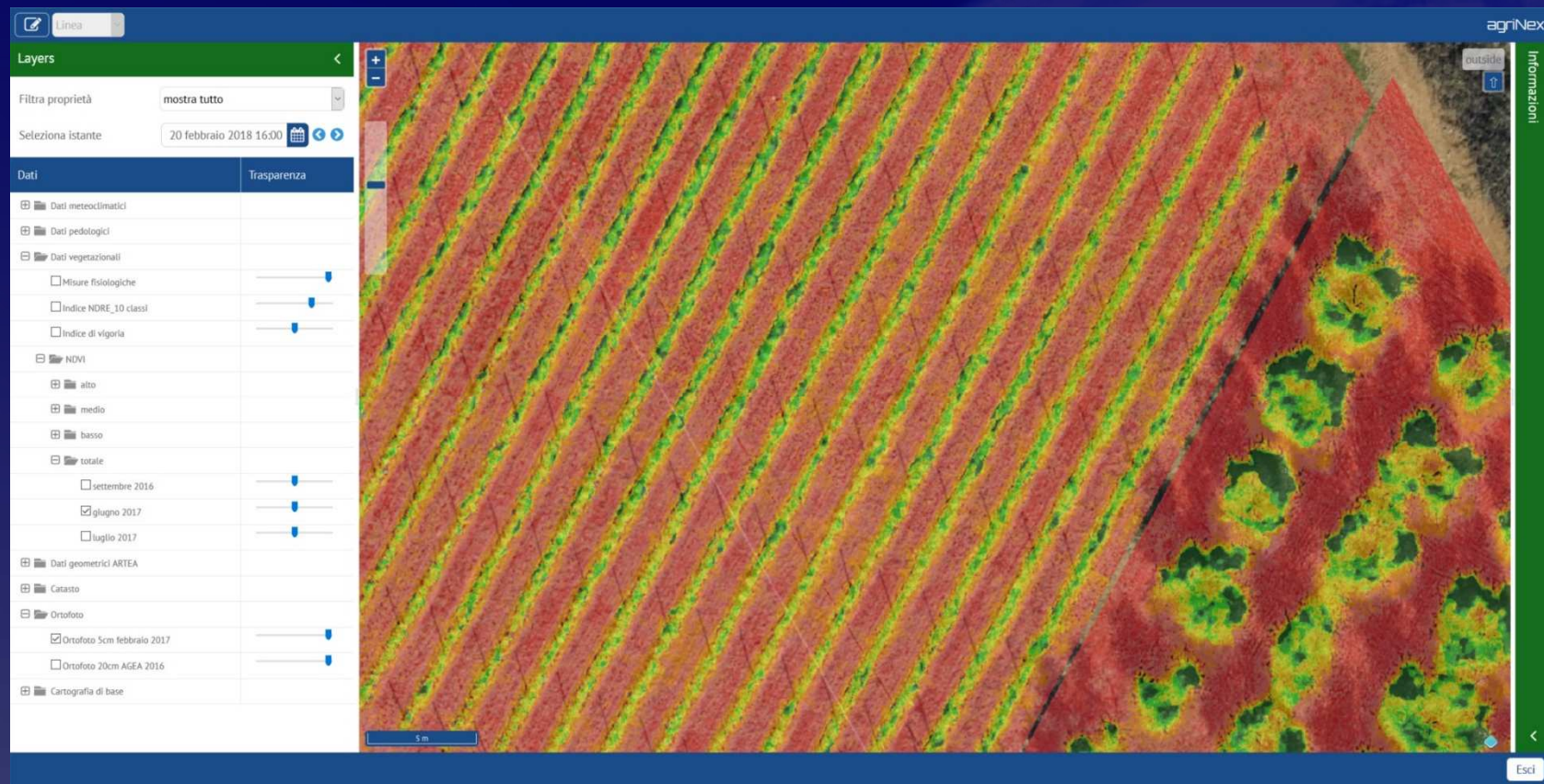
PEDOLOGICAL MAPS



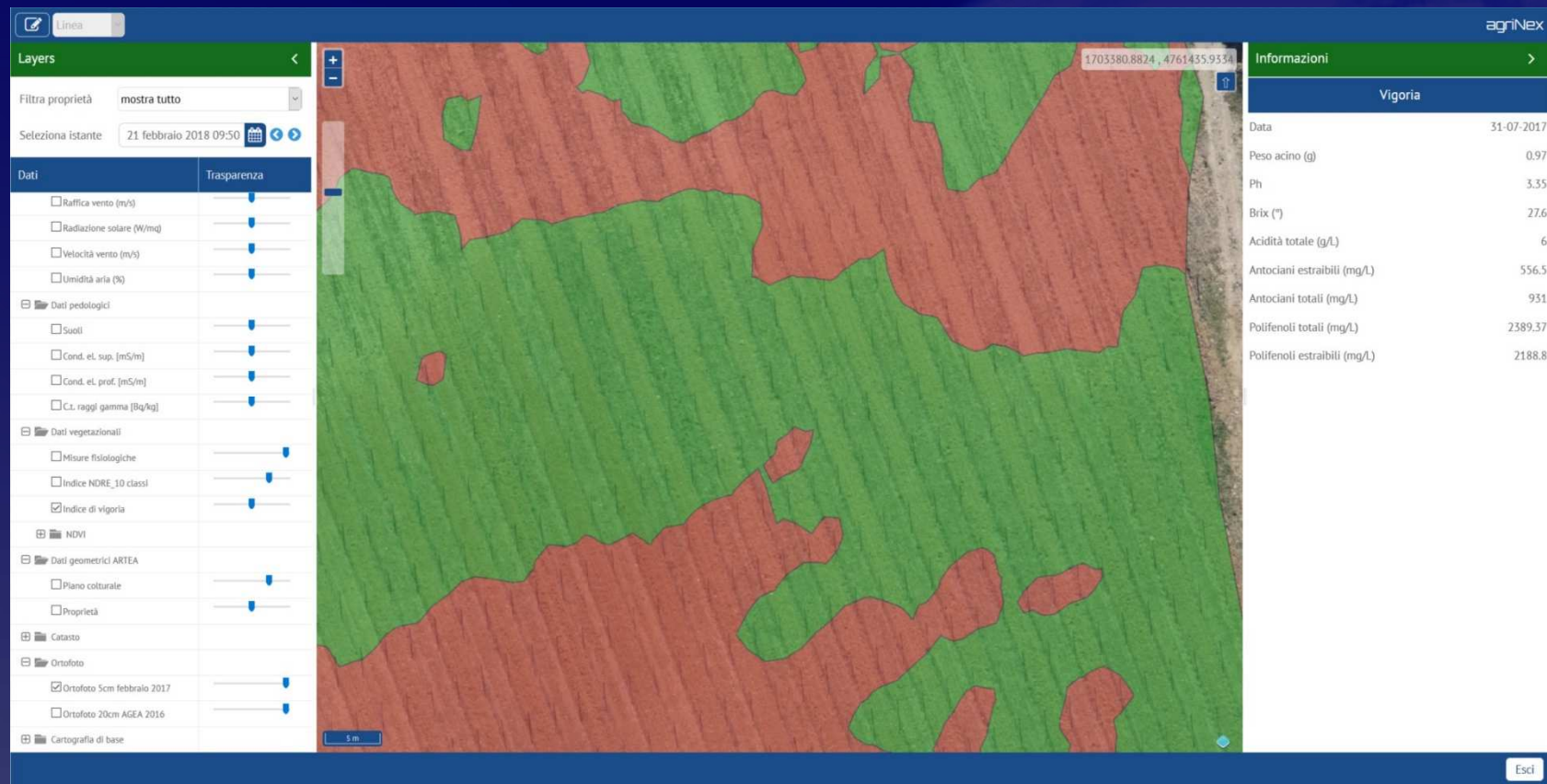
PEDOLOGICAL MAPS and SOIL ZONING



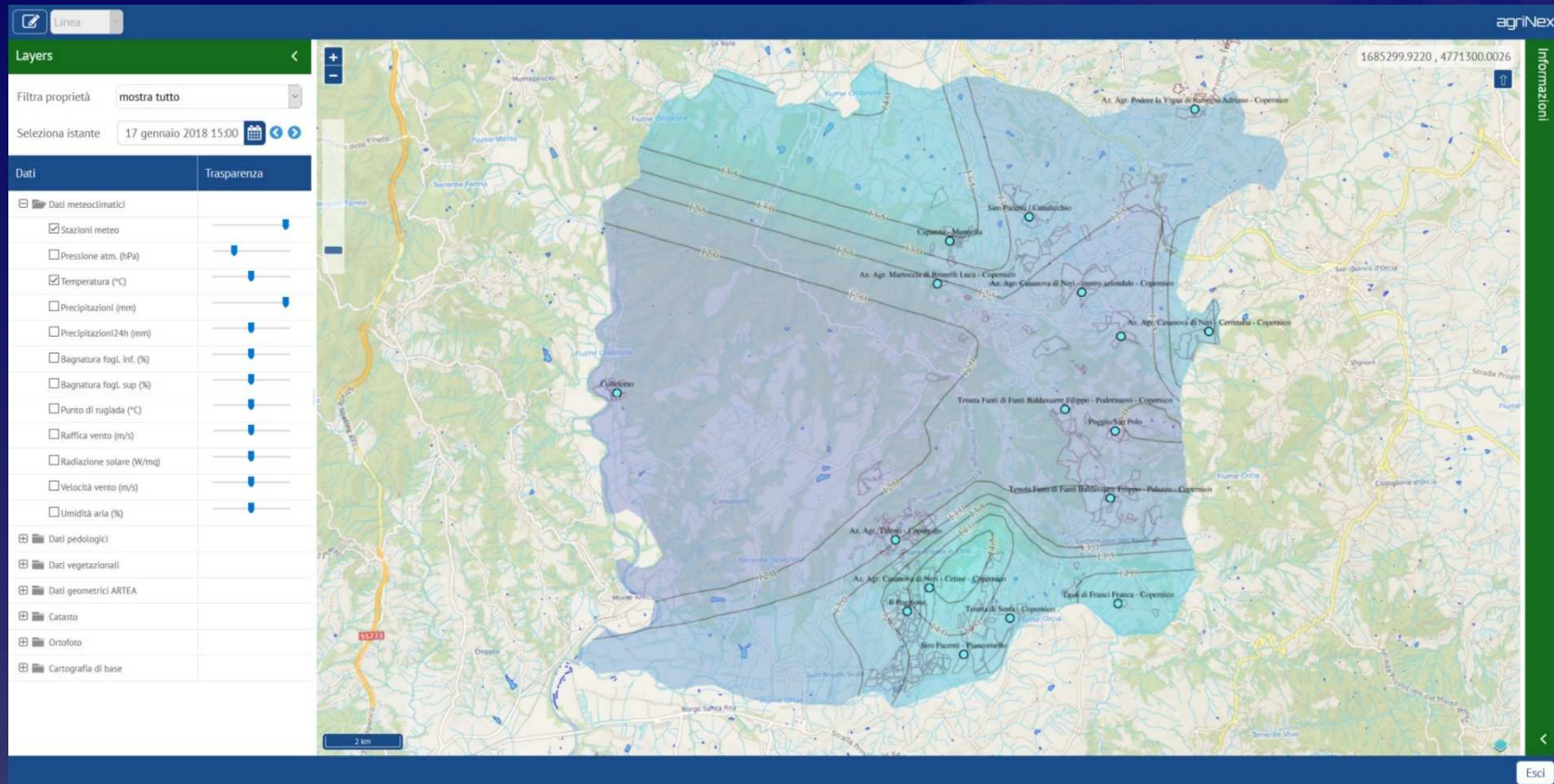
CROP VIGOUR INDEXING NDVI-NDRE



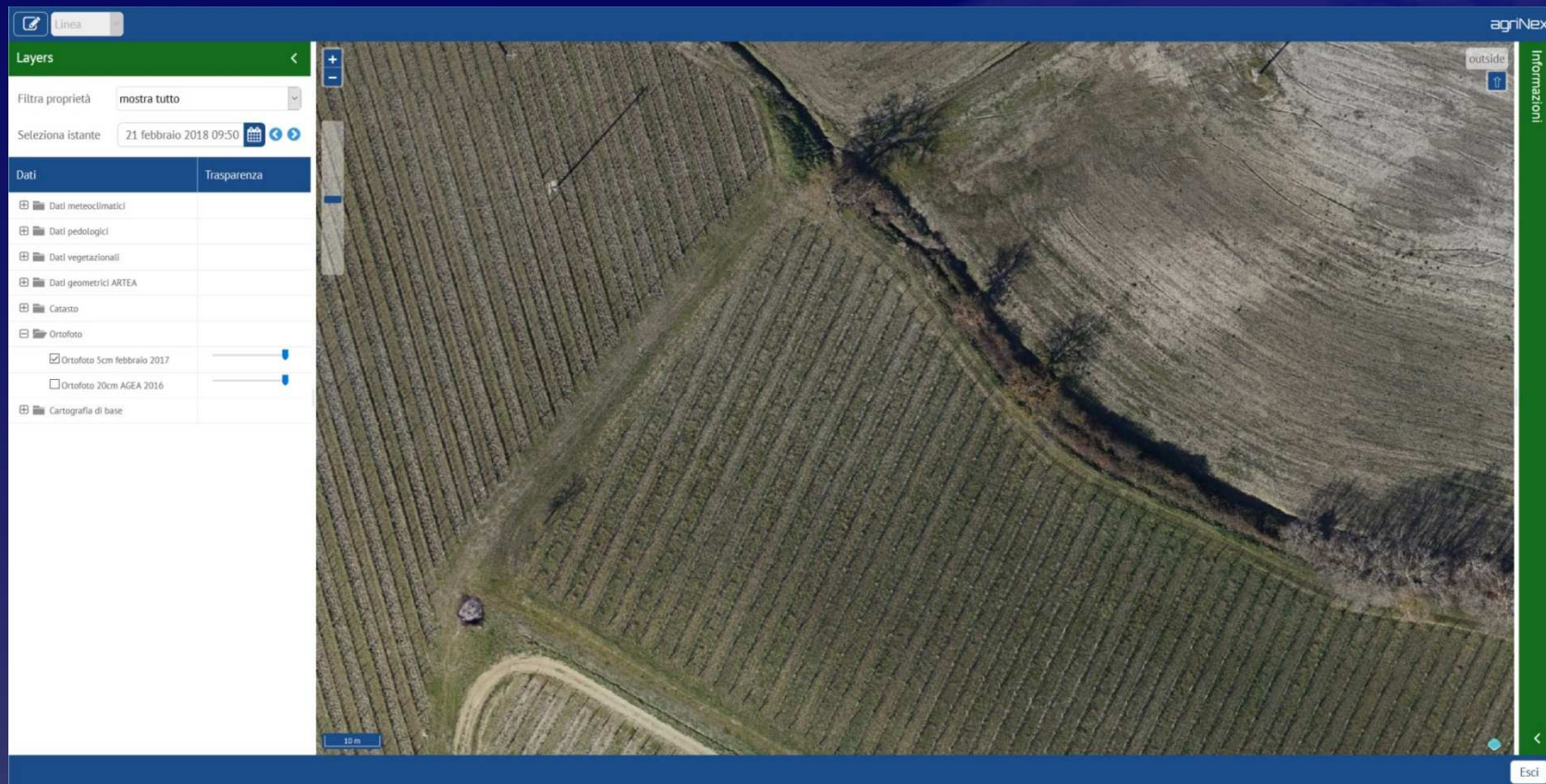
CLUSTER VIGOUR MAPS



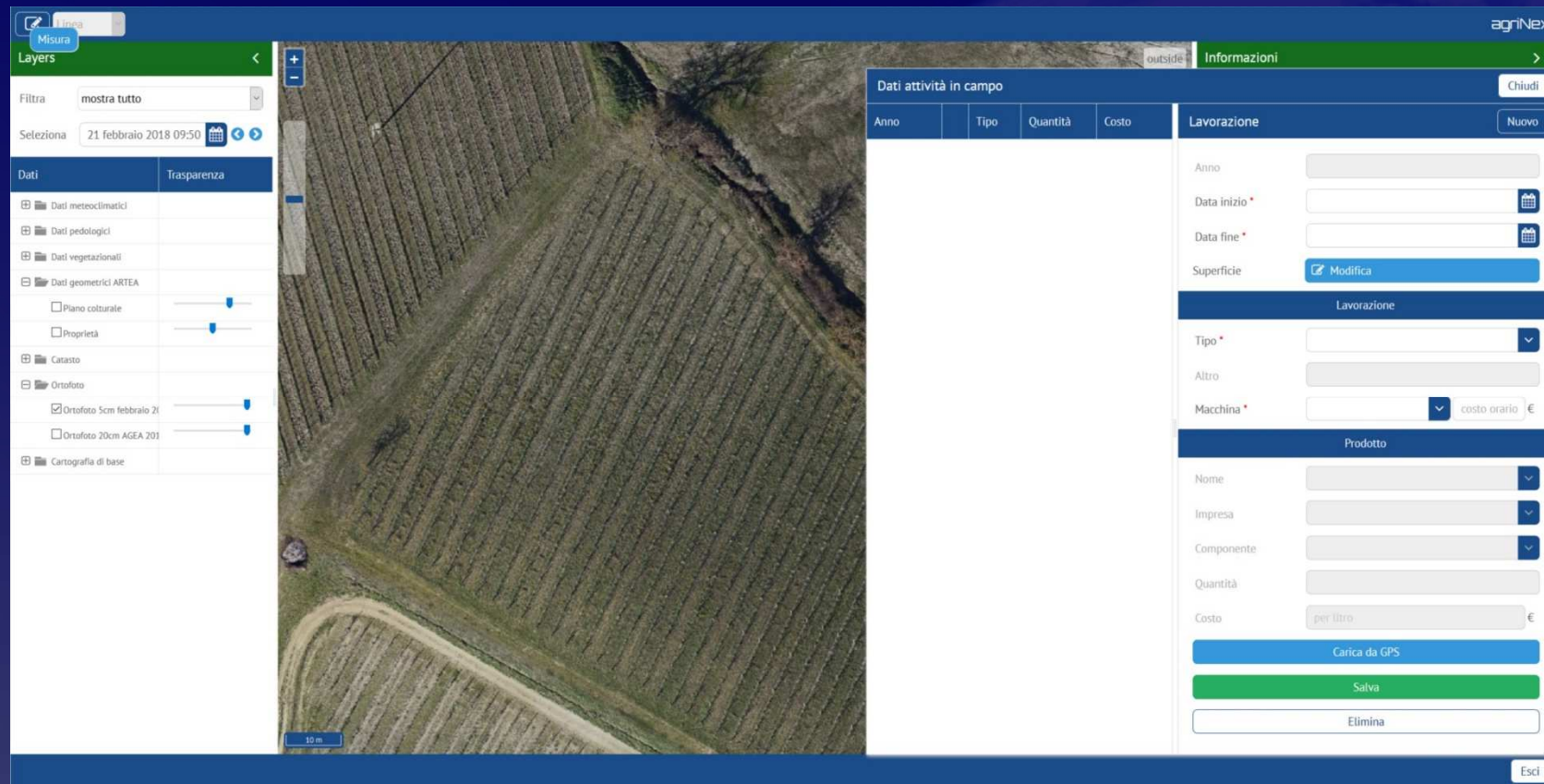
WEATHER-CLIMATE MAPS



VINEYARDS - FIELD ACTIVITIES



VINEYARDS – DATA ON FIELD ACTIVITIES



The screenshot displays the agriNex software interface. On the left, a 'Layers' panel shows various data layers like 'Dati meteorologici', 'Dati pedologici', and 'Dati vegetazionali'. The central map shows an aerial view of a vineyard with a 10m scale bar. On the right, the 'Dati attività in campo' form is visible, containing fields for 'Anno', 'Tipo', 'Quantità', 'Costo', 'Lavorazione', 'Prodotto', and 'Macchina'. The form includes buttons for 'Chiudi', 'Nuovo', 'Modifica', 'Carica da GPS', 'Salva', 'Elimina', and 'Esci'.

VINEYARDS – DATA ON FIELD ACTIVITIES

The screenshot displays the agriNex web application interface. The central part of the screen shows an aerial view of a vineyard with a red polygon highlighting a specific area. The interface includes a sidebar on the left with a 'Layers' section and a 'Trasparenza' (Transparency) section. The 'Layers' section lists various data layers such as 'Dati meteorologici', 'Dati pedologici', 'Dati vegetazionali', 'Dati geometrici ARTEA', 'Piano colturali', 'Proprietà', 'Catasto', 'Ortofoto', and 'Cartografia di base'. The 'Trasparenza' section allows users to adjust the transparency of these layers. The 'Ortofoto' section shows two options: 'Ortofoto 5cm febbraio 21' and 'Ortofoto 20cm AGEA 201'. The 'Cartografia di base' section is also visible. The right sidebar, titled 'Informazioni', contains a table of information about the selected area, including 'Terreno', 'vite', 'Ultimo aggiornamento', 'Proprietà', 'Provincia', 'Comune', 'Area (mq)', 'Anno impianto', 'N. piante', 'Cottivazione biologica', 'Destinazione', 'Qualità', 'Uso', 'Sesto su fila', 'Sesto tra fila', 'Produttivo', and 'Irriguo'. At the bottom of the interface, there are buttons for 'Dati attività in campo', 'Chiudi', and 'Esci'.

Informazioni	
Terreno	
vite	
Ultimo aggiornamento	20-12-17 02:00:00
Proprietà	SIRO PACENTI
Provincia	SI
Comune	Montalcino (dal 1/1/17)
Area (mq)	92,43
Anno impianto	1900
N. piante	0
Cottivazione biologica	tradizionale (non bio)
Destinazione	da vino
Qualità	non disponibile
Uso	non disponibile
Sesto su fila	0
Sesto tra fila	0
Produttivo	<input type="checkbox"/>
Irriguo	<input type="checkbox"/>

VINEYARDS – DATA ON FIELD ACTIVITIES

The screenshot displays the agriNex software interface. On the left, a sidebar titled 'Layers' shows various data layers like 'Dati meteorologici', 'Dati pedologici', and 'Dati vegetazionali'. The main area shows an aerial map of a vineyard with a red boundary. On the right, a 'Dati attività in campo' (Field Activity Data) form is visible, containing a table of activities and a detailed form for a specific activity.

Anno	Tipo	Quantità	Costo
2018			20.500,00
	Difesa fitosanitaria		12.500,00
	Difesa fitosanitaria		8.000,00
	Difesa fitosanitaria		9.500,00

The detailed form on the right includes fields for 'Anno' (2018), 'Data inizio' (21 feb 2018 09:00), 'Data fine' (21 feb 2018 10:00), 'Superficie' (Modifica), 'Tipo' (Difesa fitosanitaria), 'Macchina' (Macchina1), 'Prodotto' (Nome: RAIDER 40 DF, Impresa: DU PONT DE NEMOURS ITALIANA, Componente: COPPER HYDROXIDE TRIIDROSSO), 'Quantità' (1000), and 'Costo' (9,5 €). Buttons for 'Carica da GPS', 'Salva', 'Elimina', and 'Esci' are also present.

ARTEA DATA – PIANO COLTURALE



DATA ARTEA – PLOT OUTLINING

The screenshot displays the agriNex software interface for plot outlining. The central map shows an aerial view of a field with a red polygon outlining a specific plot. The left sidebar contains a 'Layers' panel with various data layers like meteorological, pedological, and vegetation data. The right sidebar shows a 'Gestione parcelle' table and a 'Notifica impianto' form with fields for name, year, number of plants, and cultivation details.

Data modifica	Nome	Sigla Artea	Stato
Tue Feb 20 2018 18:30	test1		✓
Tue Feb 06 2018 17:19	Test	2760345 - 104137560C	✓
Wed Jan 31 2018 11:26	test1		✓

Notifica impianto

Data modifica: Tue Feb 20 2018 18:30:34 GMT+0100

Nome: test1

Sigla Artea: [dropdown]

Anno: 2018

N. piante: 304

Coltivazione: Esempio Coltivazione

Vitigno: Esempio Vitigno

Tipo del vitigno: Esempio Tipo

Sesto su fila (cm): 300

Sesto tra fila (cm): 100

Angolo fila ("top): 0

Produttivo: ☒

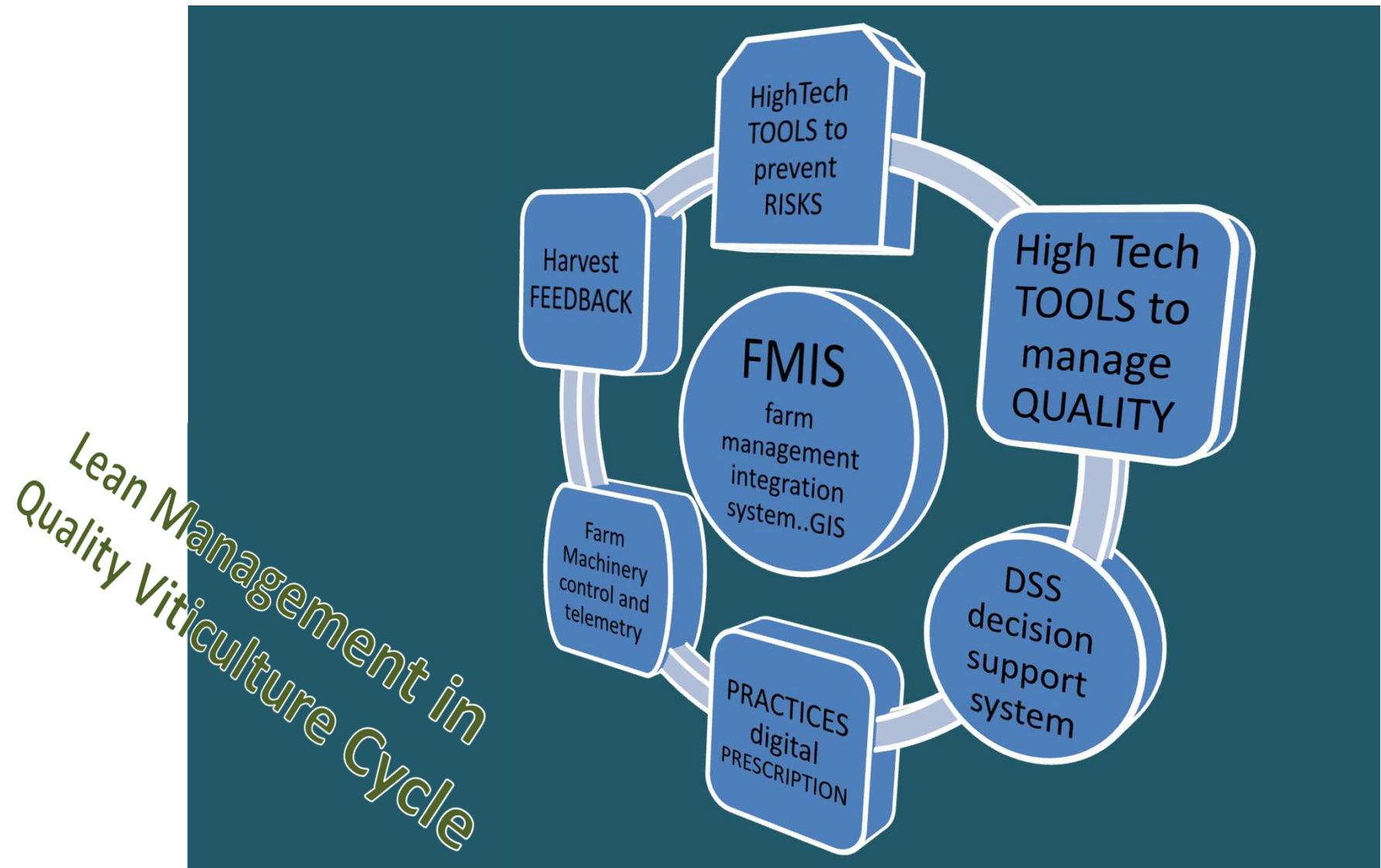
Irriguo: ☒

Geometria: ☒ Modifica

Elaborazione completata

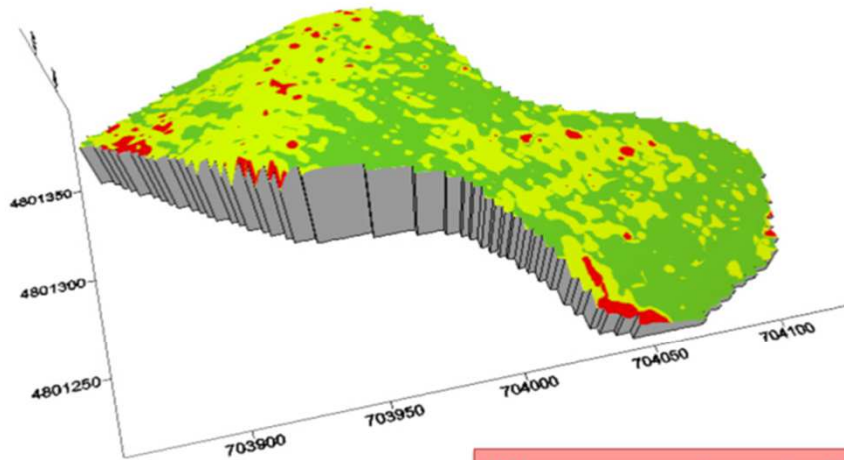
Scarica

To manage sustainability and quality in an high value chain



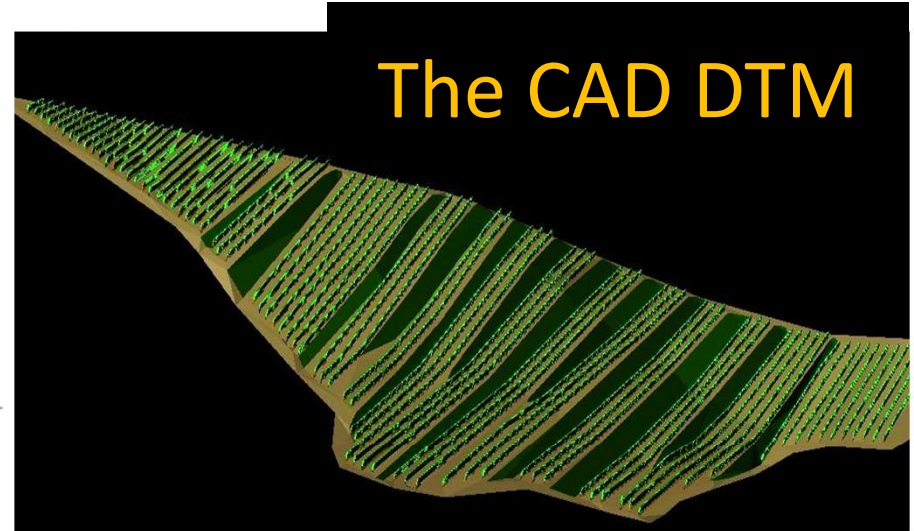


Overlay Dem + Countour map

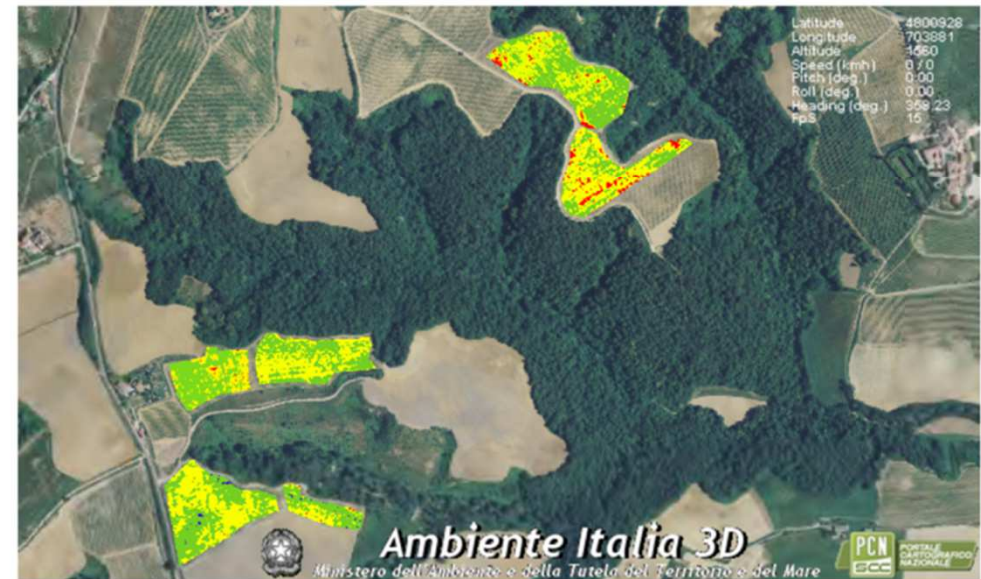
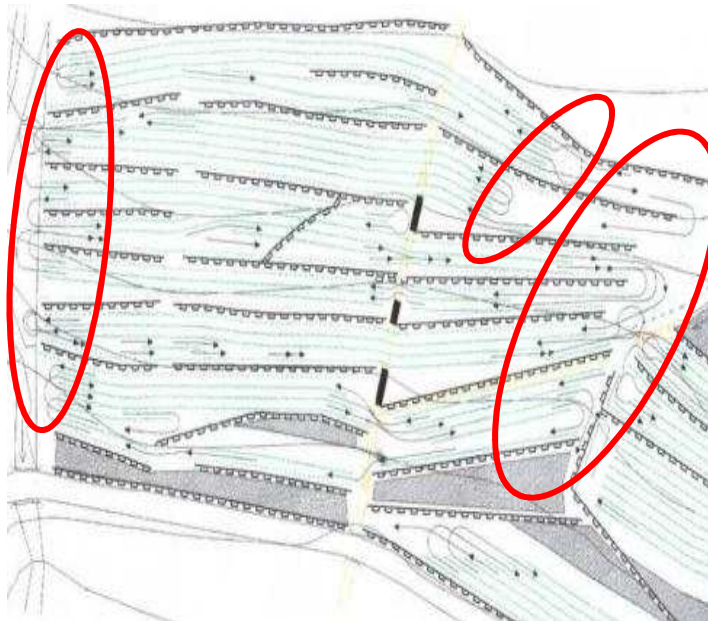


if the maps are not organized into an overall project are unnecessary

The CAD DTM



Overlay general air photos

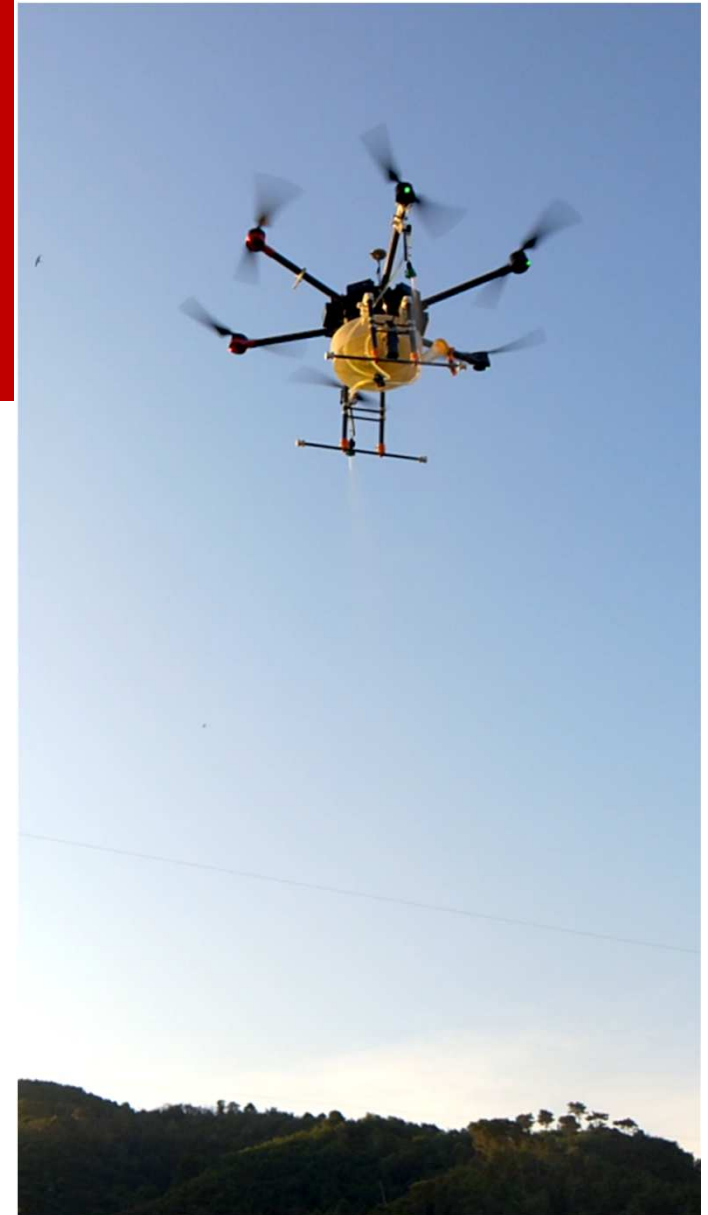
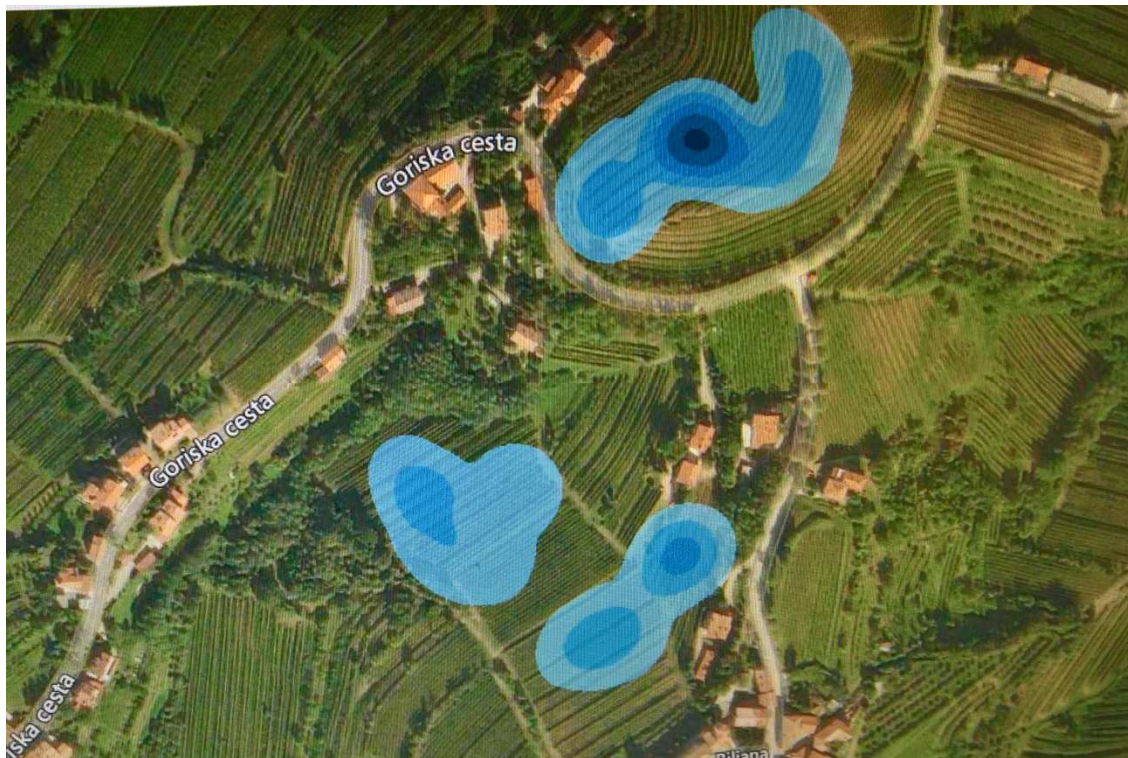


To ADD INFORMATIONS INTO A FARM SYSTEM MANAGEMENT

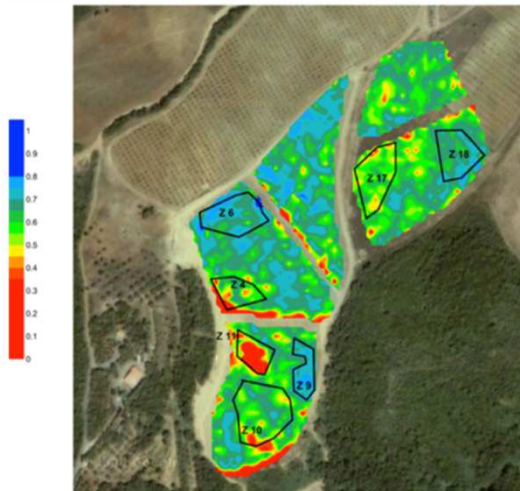
INTELLIGENT ARMS

Experiences in Tuscany - VRT by drone

- Spraying nutrinets anche chemicals
- Pollinating
- launch of predators



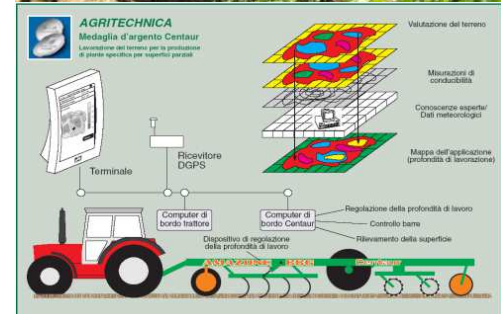
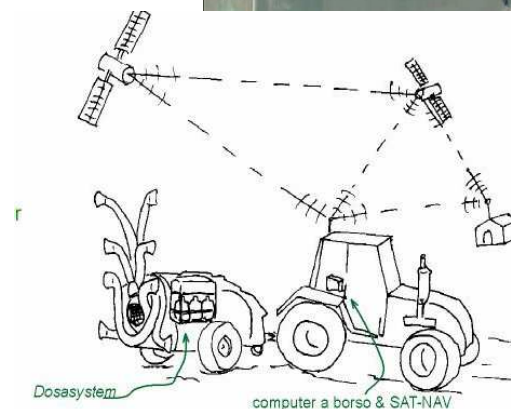
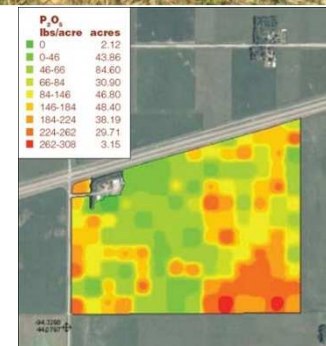
VRA technologies available



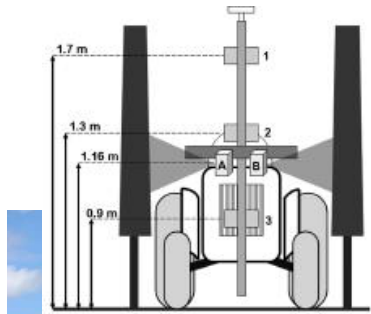
....nella pratica operativa??

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

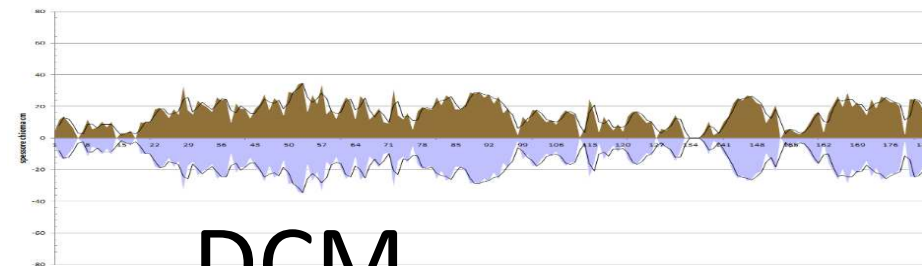
Giornata di studi | Milano 15/11/2013 | paradigmi della sostenibilità



perception systems for sustainable and profitable applications

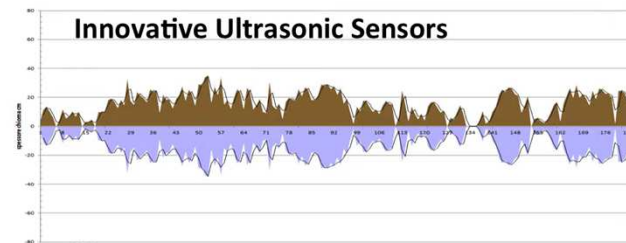
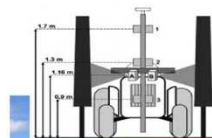


VRA – CAS
canopy management and
adaptation of treatment

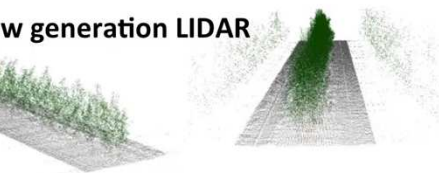


DCM

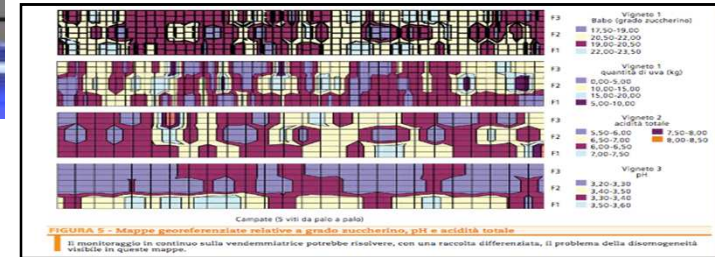
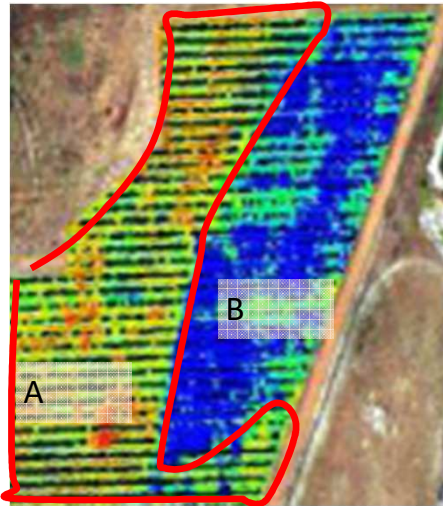
Innovative proximal perception systems



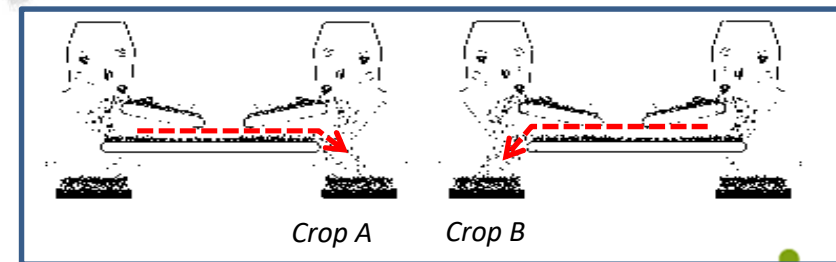
New generation LIDAR



Differential Harvesting

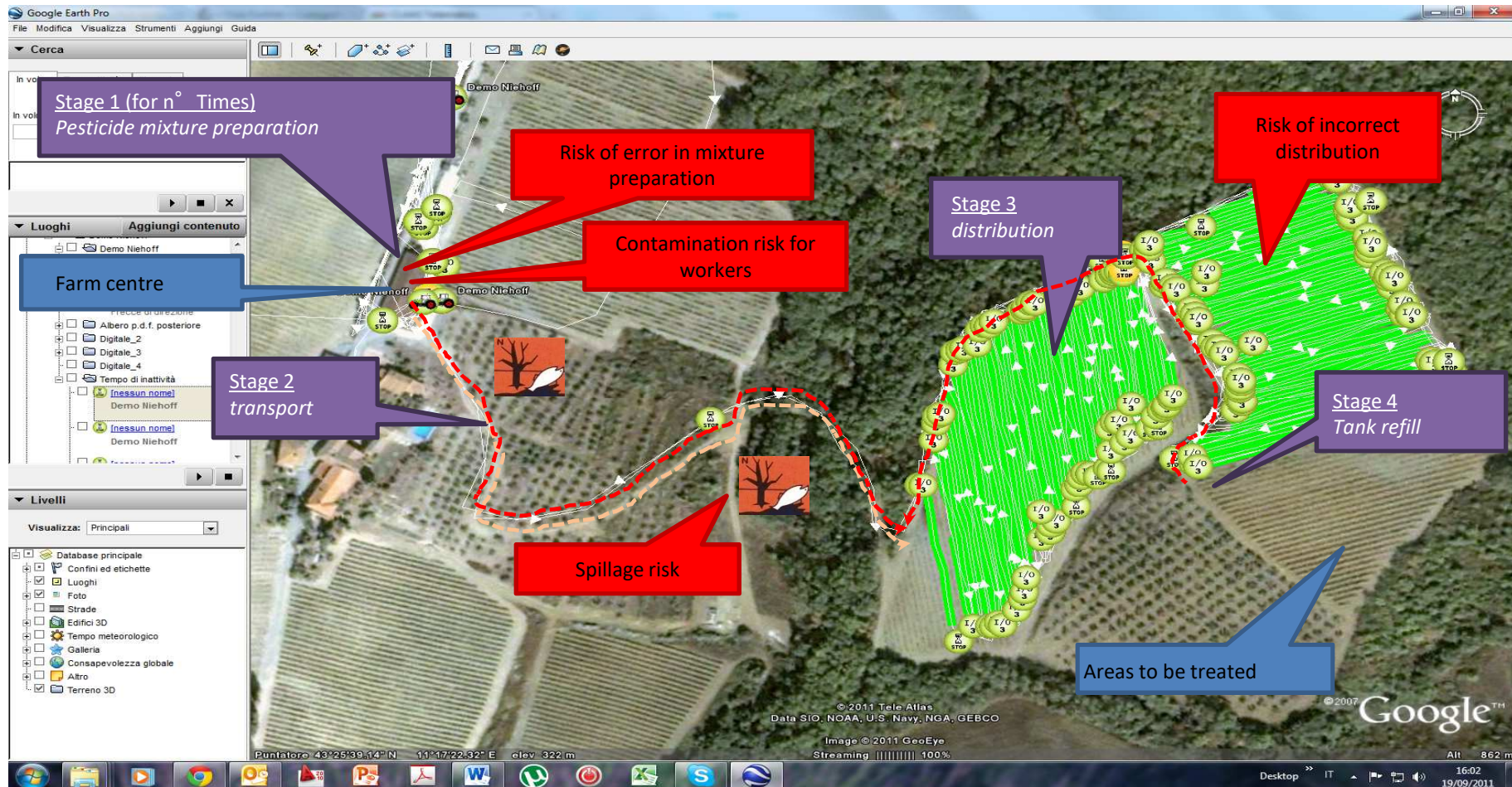


Transversal conveyor



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.

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 foster an efficient and inclusive ECOSYSTEM

Local Ecosystem Key Actors

