

Progetto: Agricoltura di precisione: una risorsa ed una possibilità per le aziende della Puglia
Acronimo AgriPuglia

Modulo 1 UVA DA TAVOLA

Incontro 4 'Il Telerilevamento per i vigneti'



AGRIPUGLIA
agricoltura di precisione

Relatore: Vincenzo Barbieri
barbieri@planetek.it



REGIONE PUGLIA

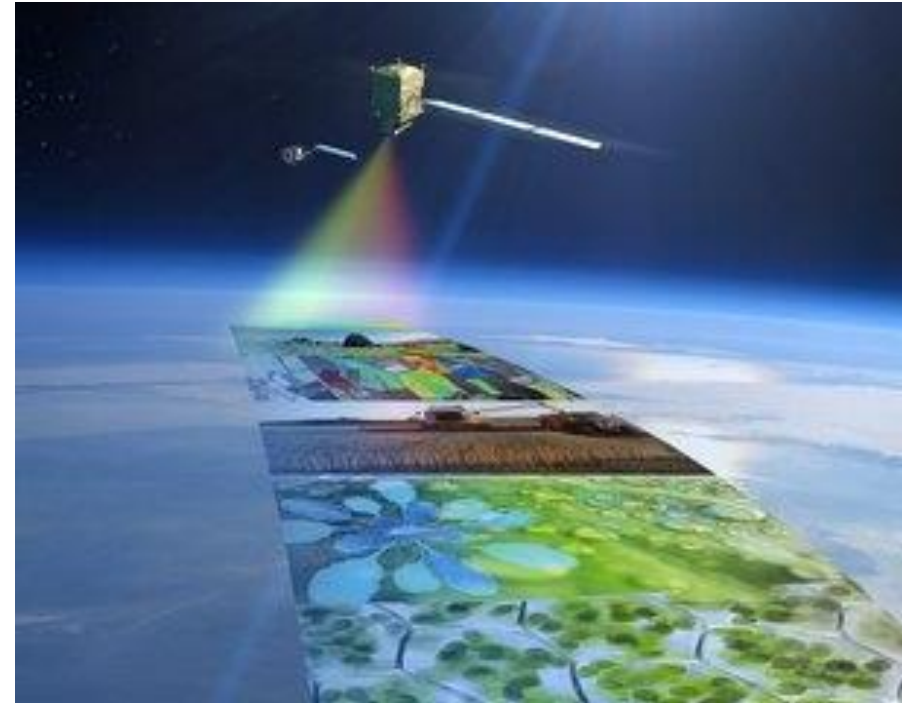
Progetto realizzato con finanziamento della
Regione Puglia - Legge regionale n. 55/2018
"Avviso pubblico per la presentazione di Progetti
pilota per la promozione e lo sviluppo
dell'Agricoltura di Precisione"



CHÈUVA

Spazio & Agricoltura

- ✓ **Agricoltura di precisione**
- ✓ **PAC – Controlli / Servizi ecosistemici**
- ✓ **Servizi Assicurativi e bancari**
- ✓ **Previsioni di produttività**
 - Trade**
 - Sostenibilità alimentare**
- ✓ **Rischi crisi internazionali**
- ✓ **Tutela ambientale**
- ✓



Fonte foto: © Esa

- **Migliorare la qualità**
- **Incrementare le produzioni**
- **Ridurre i costi**

- **Tutela dell'ambiente**
- **Resilienza dell'azienda**





Luglio/Agosto

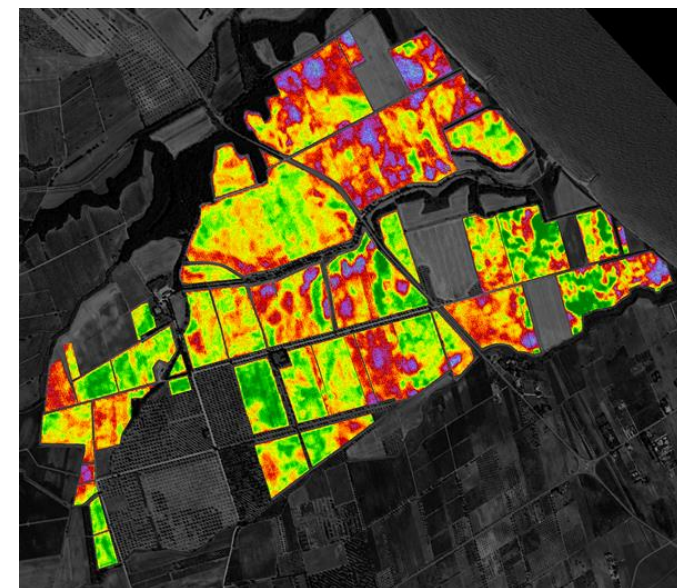
- ✓ Ottimizzazione campionamenti
- ✓ Supporto per la **raccolta selettiva**
 - Tra vigneti
 - Nel vigneto

Maggio/Giugno/Luglio

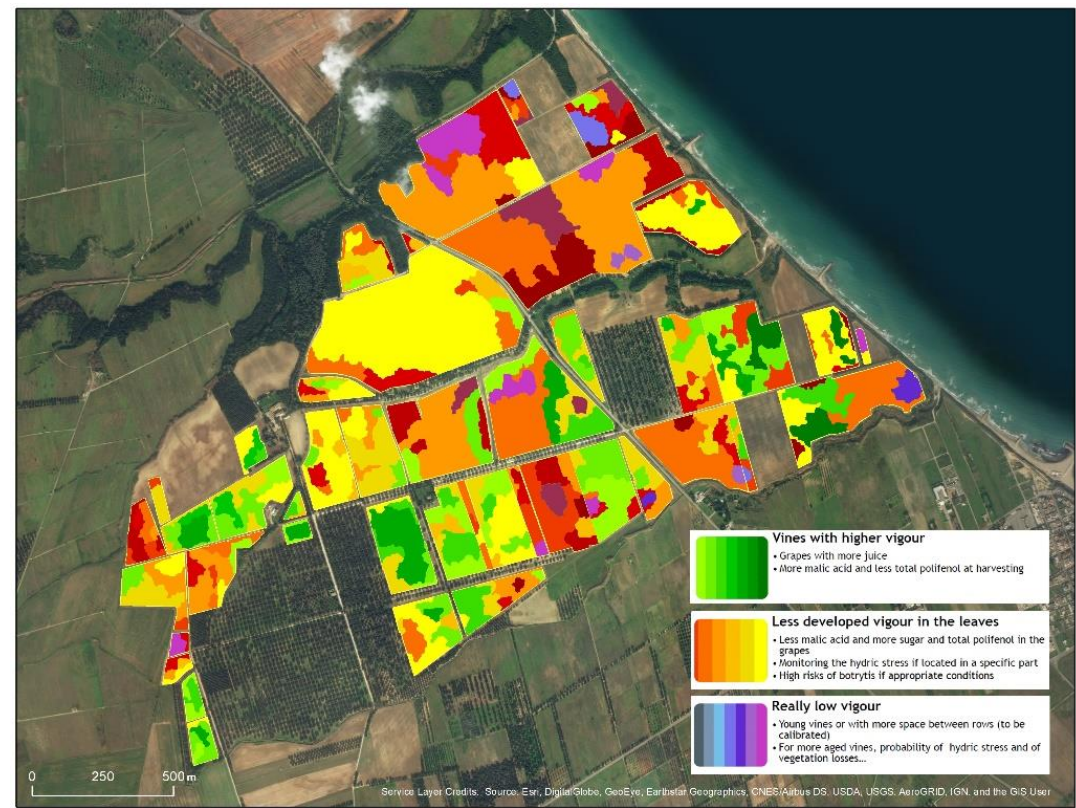
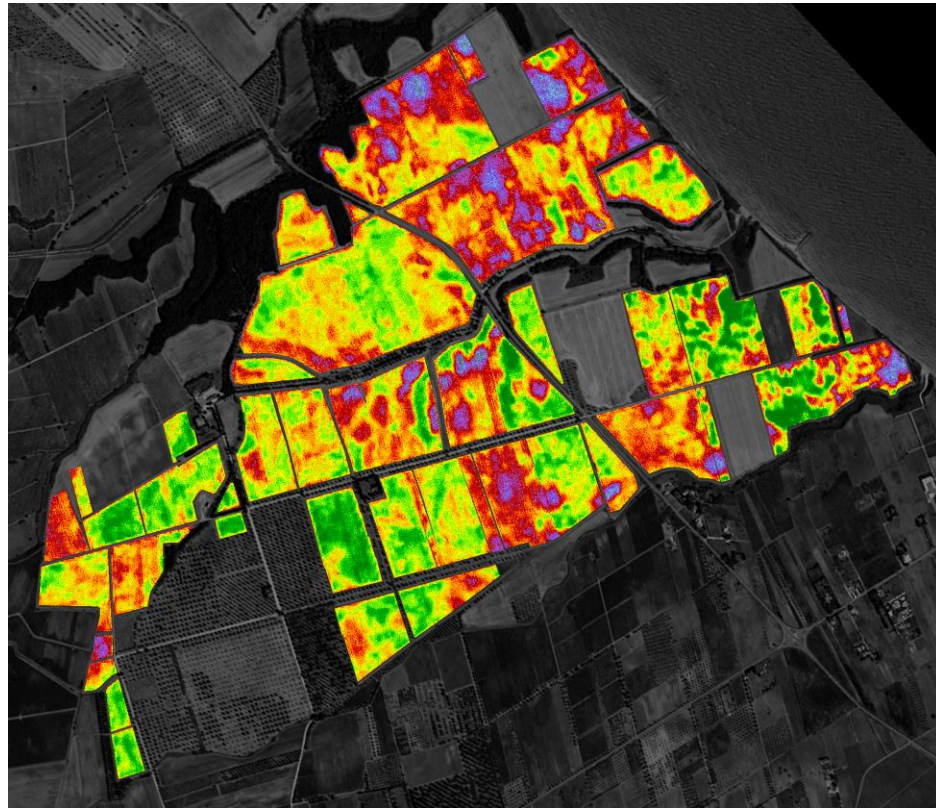
- ✓ Supporto delle pratiche agronomiche:
 - Concimazione
 - Irrigazione

Serie storiche

Individuare criticità strutturali



Mappe di Vigore vegetativo



Tenuta “Masseria Maime” - S. Pietro Vernotico (Br)

Dalla mappa del vigore alla zonazione



Tenuta “Masseria Maime” - S. Pietro Vernotico (Br)

- **Varietà**
- **Portainnesto**
- **Data di impianto del vigneto**
- **Orientamento filari**
- **Distanza filari**
- **Distanza piede**
- **Tipologia del suolo**



2 Tenute per complessivi 600ha di vigneti:
 Bocca di Lupo - Minervino Murge (Puglia – BAT)
 Masseria Maïme - San Pietro Vernotico (Puglia - BR)



Local projection: UTM_Zone_34 Datum: WGS_1984
 Scale 1: 25.000 for A3 print



Azienda Vinicola localizzata ad Andria con oltre 70ha di vigneti (Puglia – BAT)



Local projection: UTM_Zone_34 Datum: WGS_1984



Cantina localizzata a Venosa con circa 400 soci con 900ha di vigneti dislocati in 4 comuni (Basilicata - PZ)



Local projection: UTM_Zone_34 Datum: WGS_1984
 Scale 1: 15.000 for A3 print

Descrizione azienda





Il territorio
NEGROAMARO

UNO DEI VARIETALI PIÙ POTENTI
E VERSATILI DEL TERRITORIO
PUGLIESE

[DISCOVER MORE](#)



Il territorio
CHARDONNAY

L'UVA A BACCA BIANCA CHE
VIAGGIA IN TUTTO IL MONDO

[DISCOVER MORE](#)

Il territorio
CABERNET SAUVIGNON

IL PIÙ CONOSCIUTO VITIGNO A
BACCA ROSSA

[DISCOVER MORE](#)



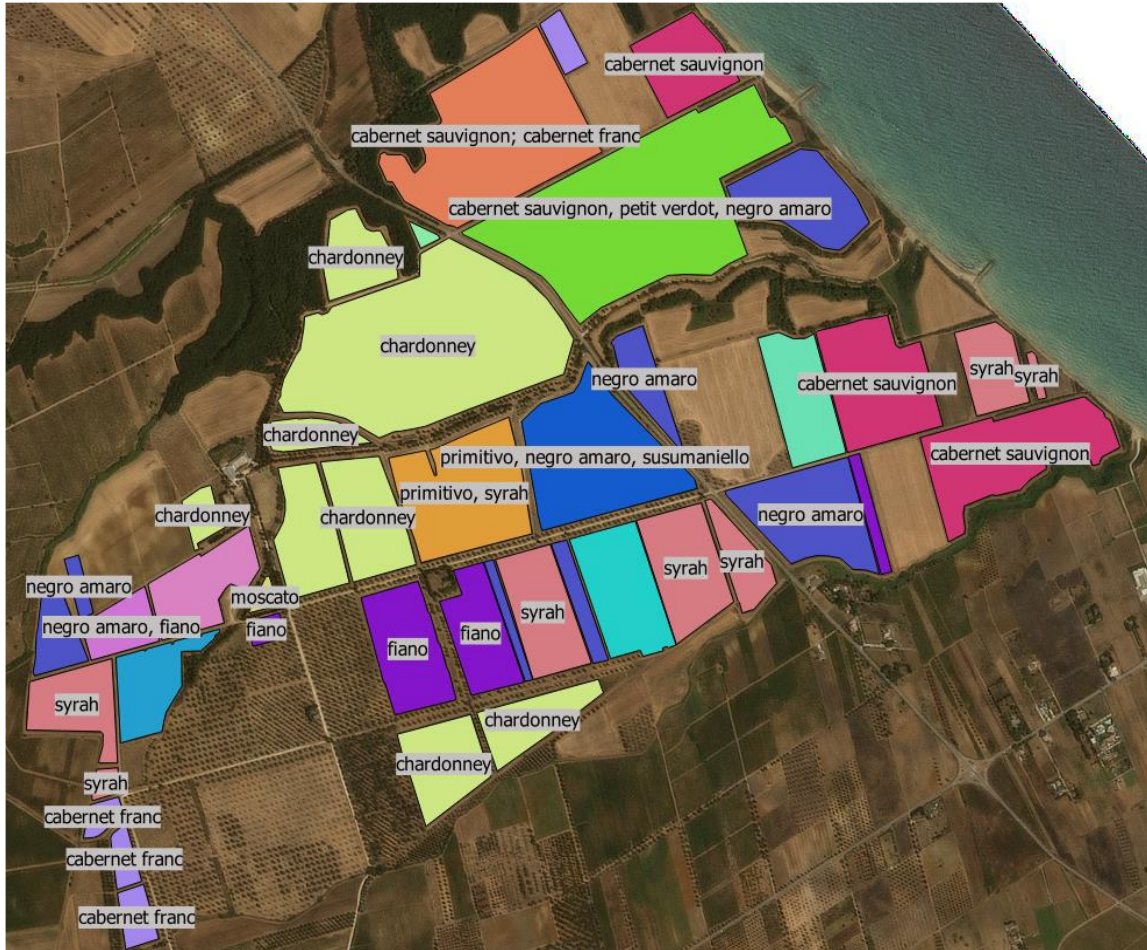
Il territorio
PRIMITIVO

IL SIMBOLO DELLA RINASCITA
ENOLOGICA PUGLIESE

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La sperimentazione sui vigneti

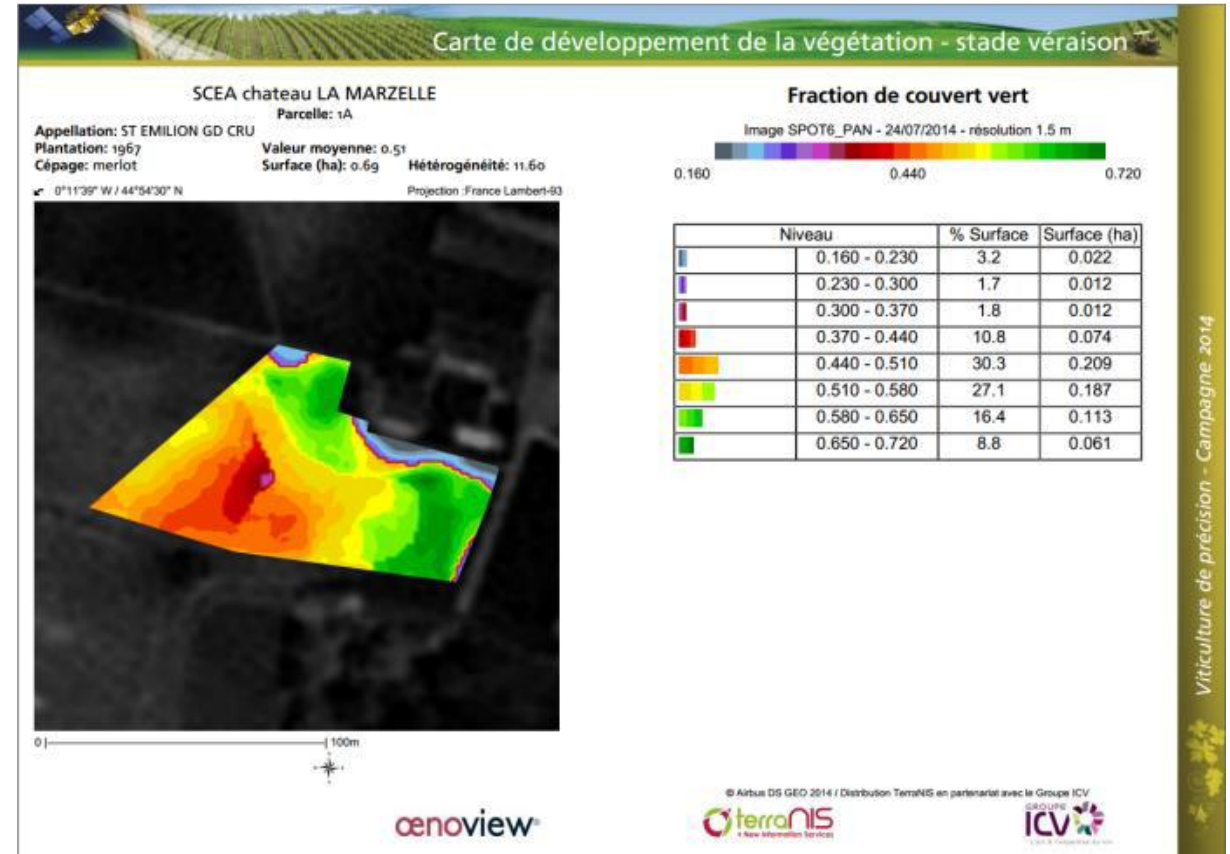


- E' sufficiente una sola acquisizione satellitare
- L'immagine è stata acquisita a luglio (invaiatura)

OENOVIEW

Il prodotto è costituito da due mappe:

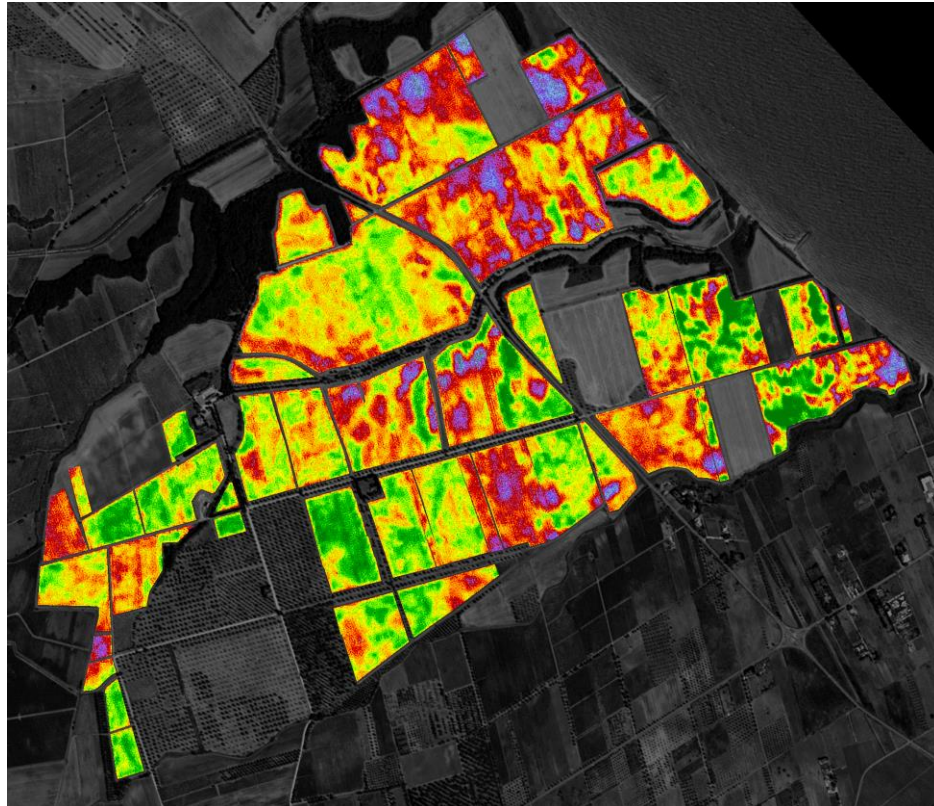
- La mappa del vigore
- La mappa della zonazione



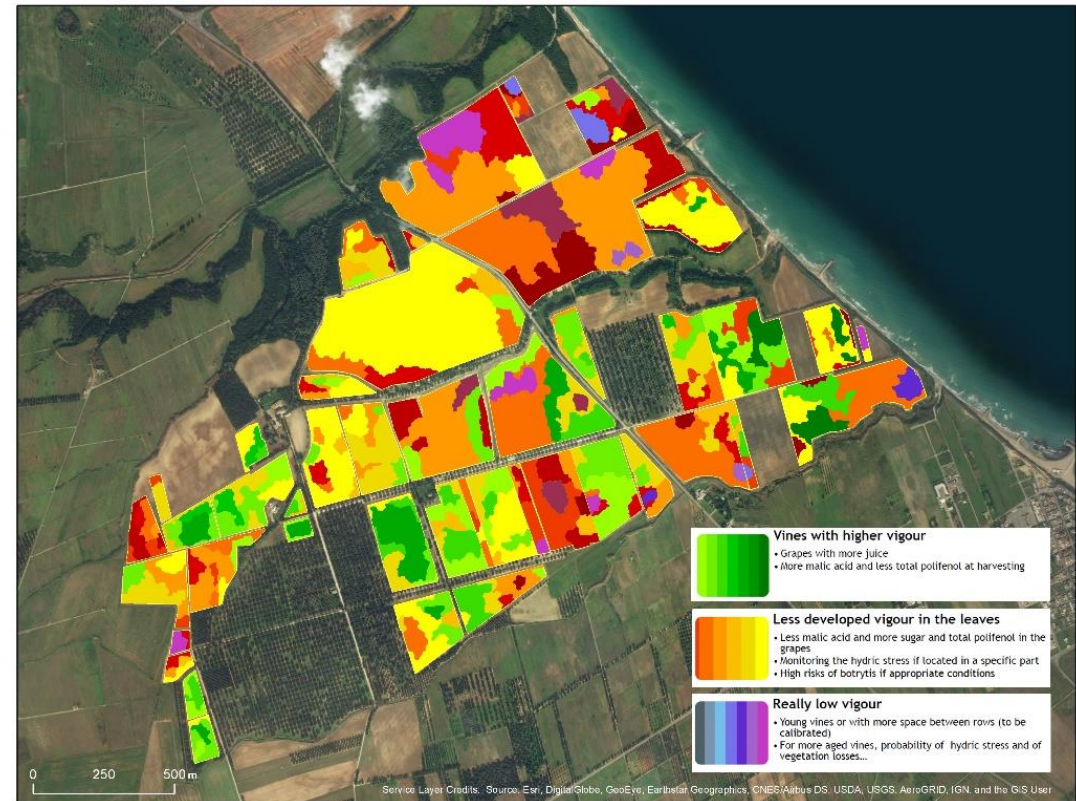
Viticulture de précision - Campagne 2014

Oenoview per Tormaresca

Mappa del vigore



Mappa di zonazione





Map of vegetation development - veraison stage

SanPietro Vernotico

Field: Vine_01

Variety: cabernet sauvignon; cabernet franc

Plantation: 2001_2002_2009

Appellation:

Mean Value: 0.20

Area (ha): 15.61

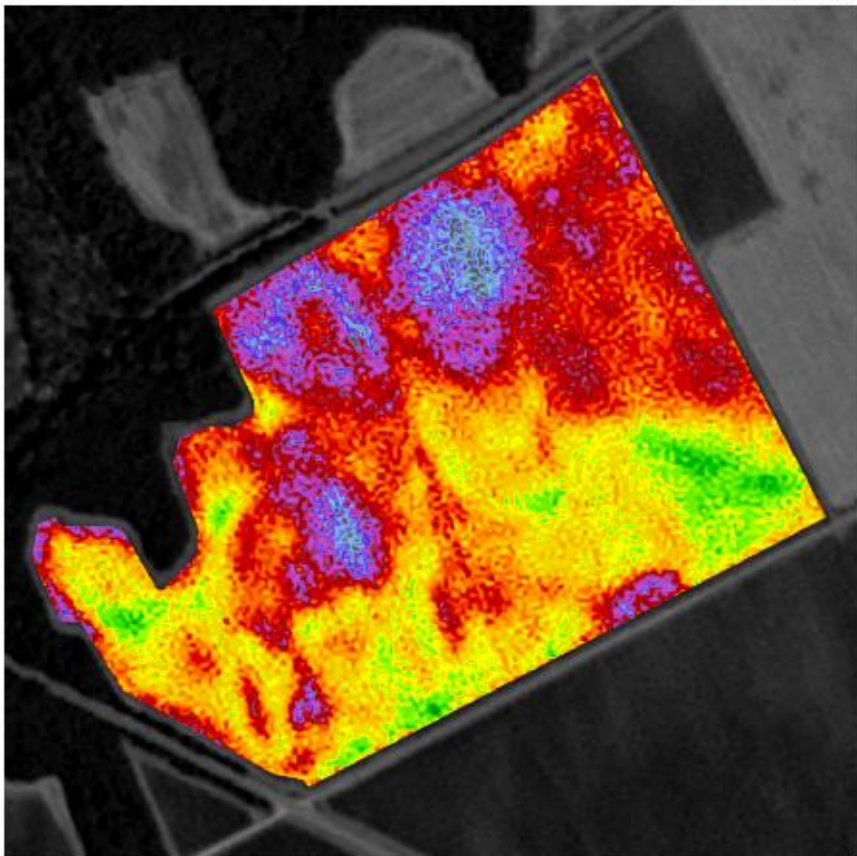
Heterogeneity: 5.50

Green Cover Fraction

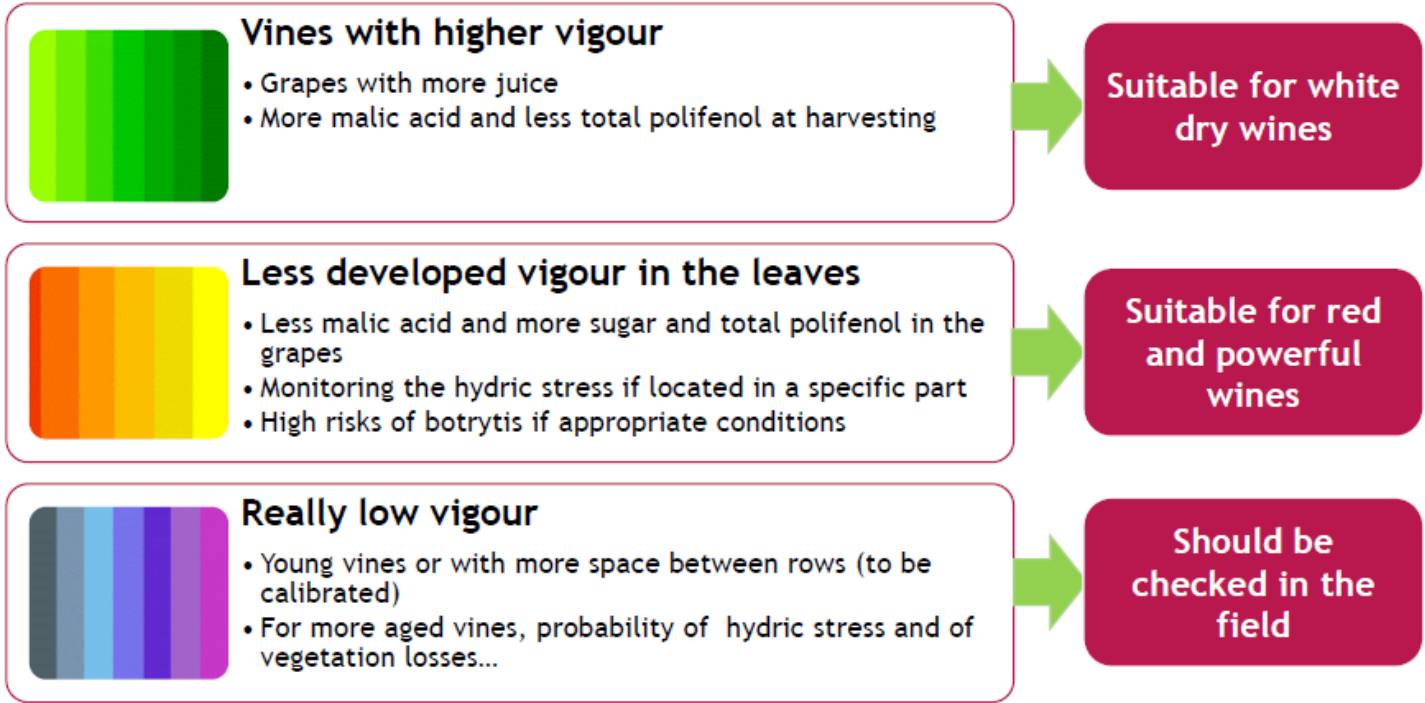
Image SPOT7_PAN - 24/07/2017 - resolution 1.5 m



Projection :UTM 34N



0 | 100m



SanPietro Vernotico

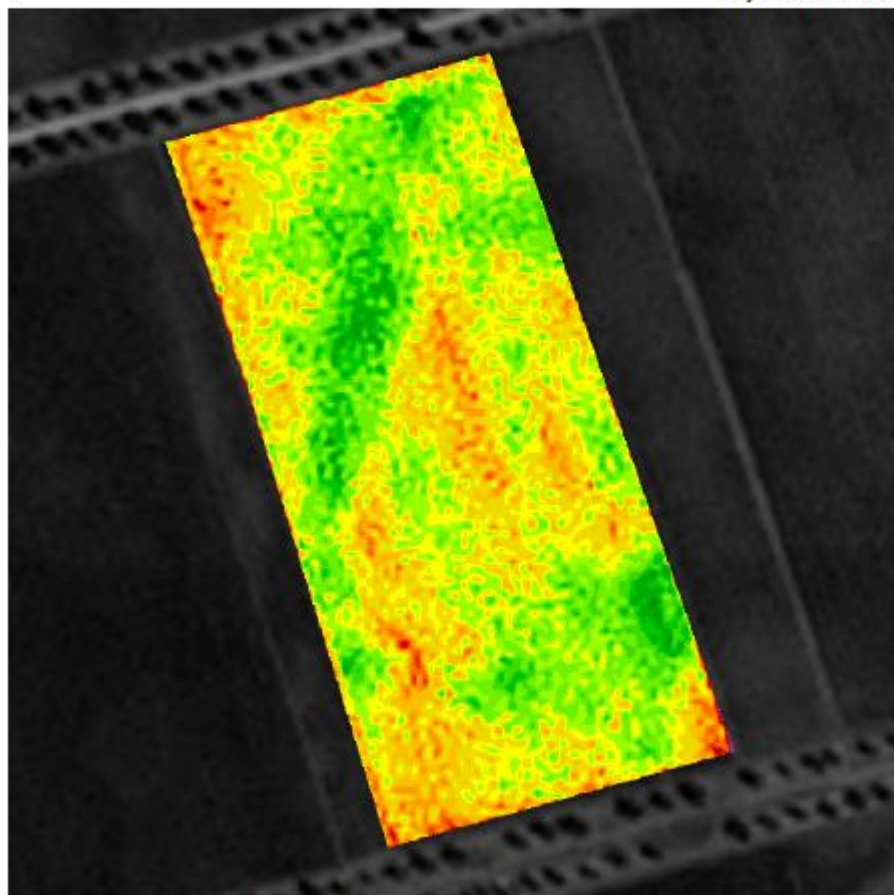
Field: Vine_18

Variety: syrah
Plantation: 2009
Appellation:

Mean Value: 0.26
Area (ha): 4.94

Heterogeneity: 2.70

Projection :UTM 34N



0 | 100m



Vines with higher vigour

- Grapes with more juice
- More malic acid and less total polifenol at harvesting



Suitable for white dry wines



Less developed vigour in the leaves

- Less malic acid and more sugar and total polifenol in the grapes
- Monitoring the hydric stress if located in a specific part
- High risks of botrytis if appropriate conditions



Suitable for red and powerful wines



Really low vigour

- Young vines or with more space between rows (to be calibrated)
- For more aged vines, probability of hydric stress and of vegetation losses...



Should be checked in the field

SanPietro Vernotico

Field: Vine_10

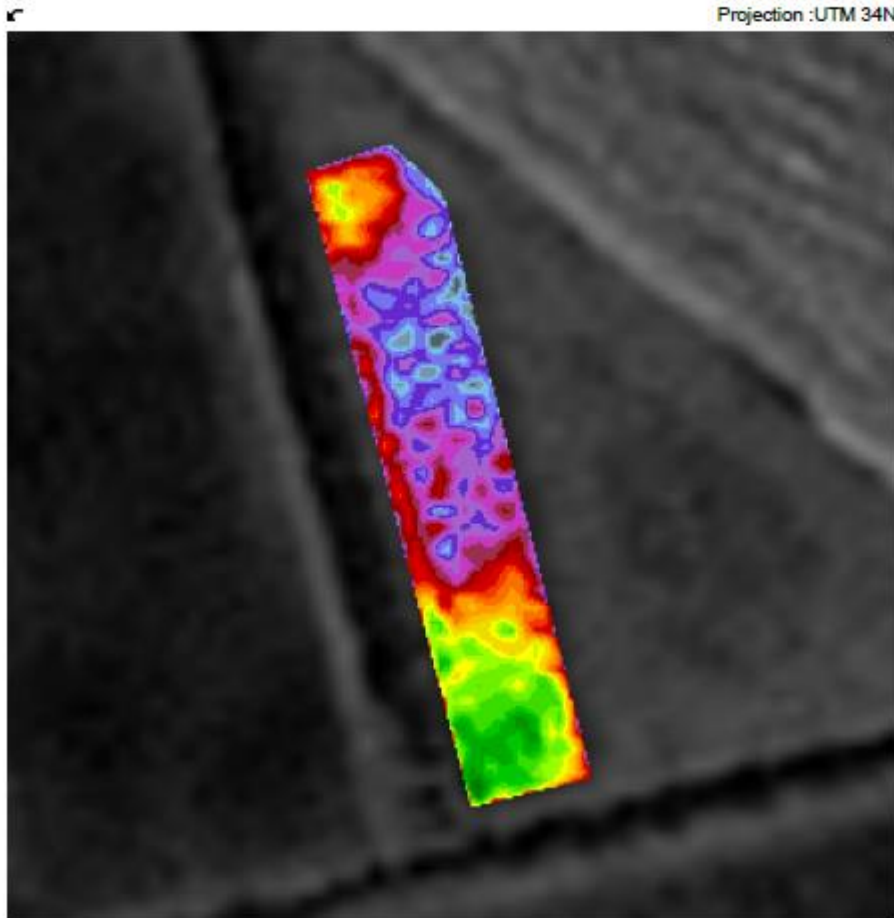
Variety: syrah
Plantation: 2009
Appellation:

Mean Value: 0.17

Area (ha): 0.29

Heterogeneity: 7.80

Projection :UTM 34N



Vines with higher vigour

- Grapes with more juice
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Suitable for white dry wines



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Should be checked in the field

Map of vegetation zoning - veraison stage

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Variety: cabernet sauvignon; cabernet franc

Plantation: 2001_2002_2009

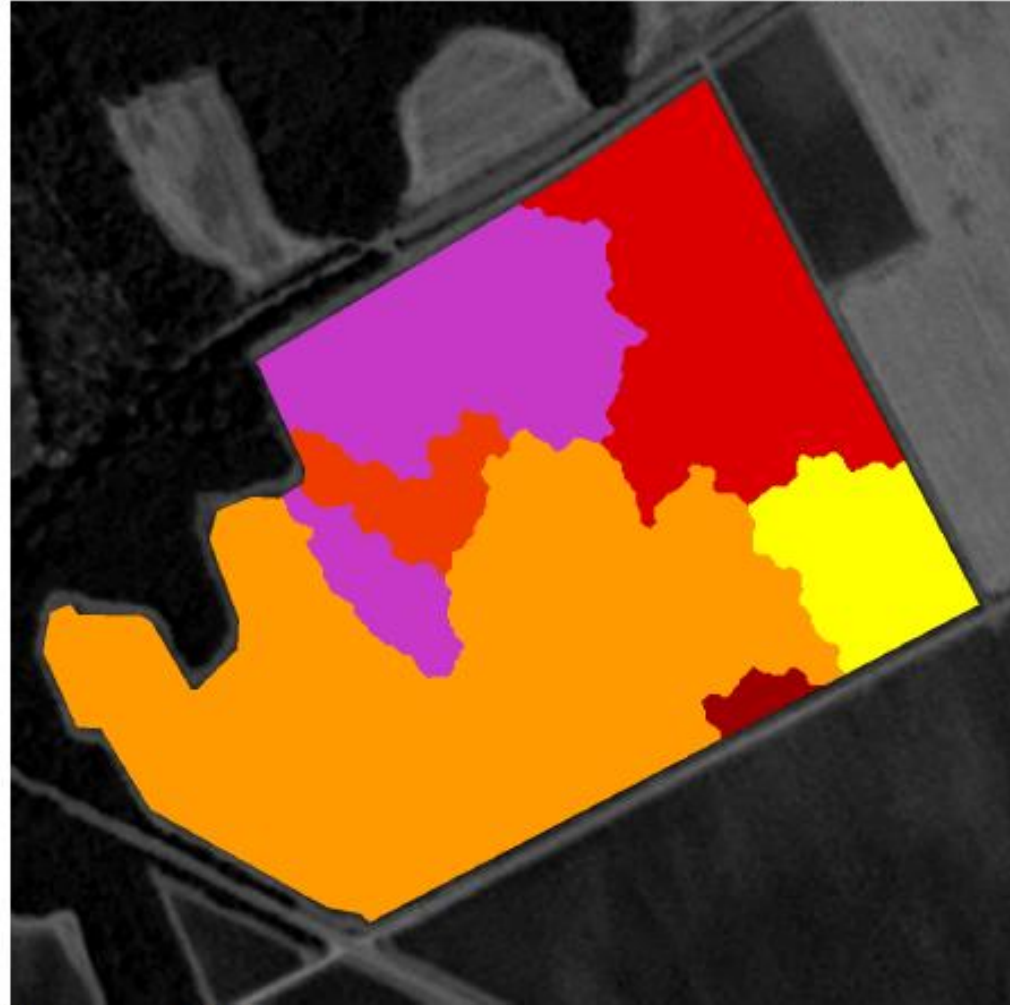
Appellation:

Mean Value: 0.20

Area (ha): 15.61

Heterogeneity: 5.50

Projection : UTM 34N



Green Cover Fraction

Image SPOT7_PAN - 24/07/2017 - resolution 1.5 m

Level	% Area	Area (ha)
0.127	15.8	2.466
0.131	3.7	0.577
0.150	1.1	0.172
0.179	19.6	3.059
0.189	4.0	0.624
0.227	48.5	7.569
0.266	7.2	1.124

Legenda

Eterogenità ≤ 5 buon grado di omogenità \Rightarrow vino con le stesse caratteristiche

Eterogenità > 10 necessità di una raccolta separata per garantire una elevata qualità del vino



0 | 100m

A
R
O

mediterraneo
UNIVERSITÀ DI TRIESTE

CHÈUVA

Map of vegetation zoning - veraison stage

SanPietro Vernotico

Field: Vine_o6

Variety: negro amaro

Plantation: 2002

Appellation:

Mean Value: 0.27

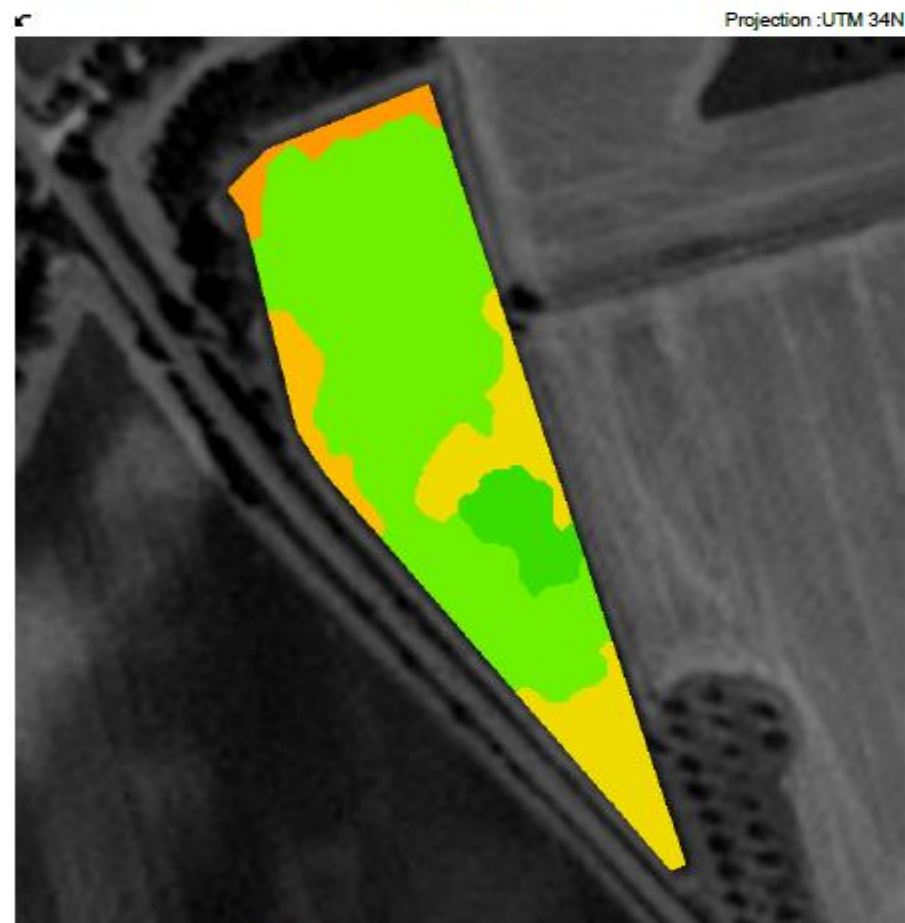
Area (ha): 2.21

Heterogeneity: 3.00

Green Cover Fraction

Image SPOT7_PAN - 24/07/2017 - resolution 1.5 m

Level	% Area	Area (ha)
0.222	5.1	0.113
0.237	5.4	0.120
0.252	20.1	0.445
0.282	63.4	1.404
0.300	6.0	0.133



Projection : UTM 34N

0 | 100m



21/02/2024

REGIONE PUGLIA

dell'Agricoltura di Precisione

AGRICOLTURA PUGLIA



18 CHÈUVA



SanPietro Vernotico

Field: Vine_10

Variety: syrah
 Plantation: 2009
 Appellation:

Mean Value: 0.17

Area (ha): 0.29

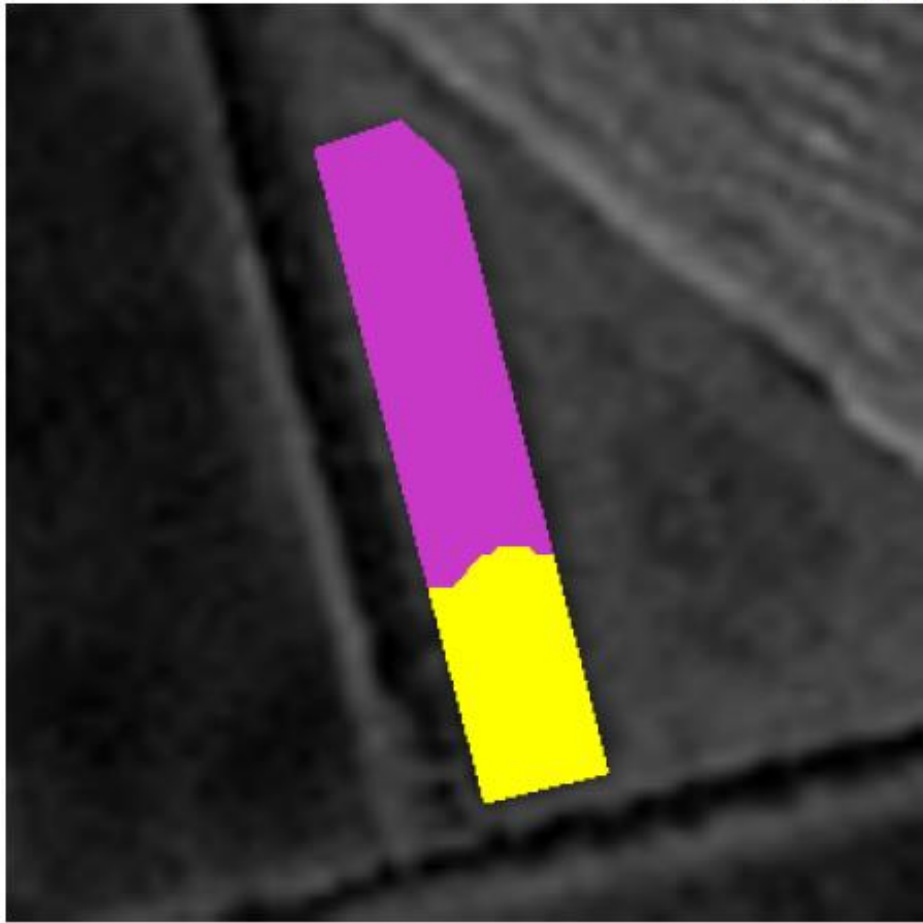
Heterogeneity: 7.80

Projection :UTM 34N

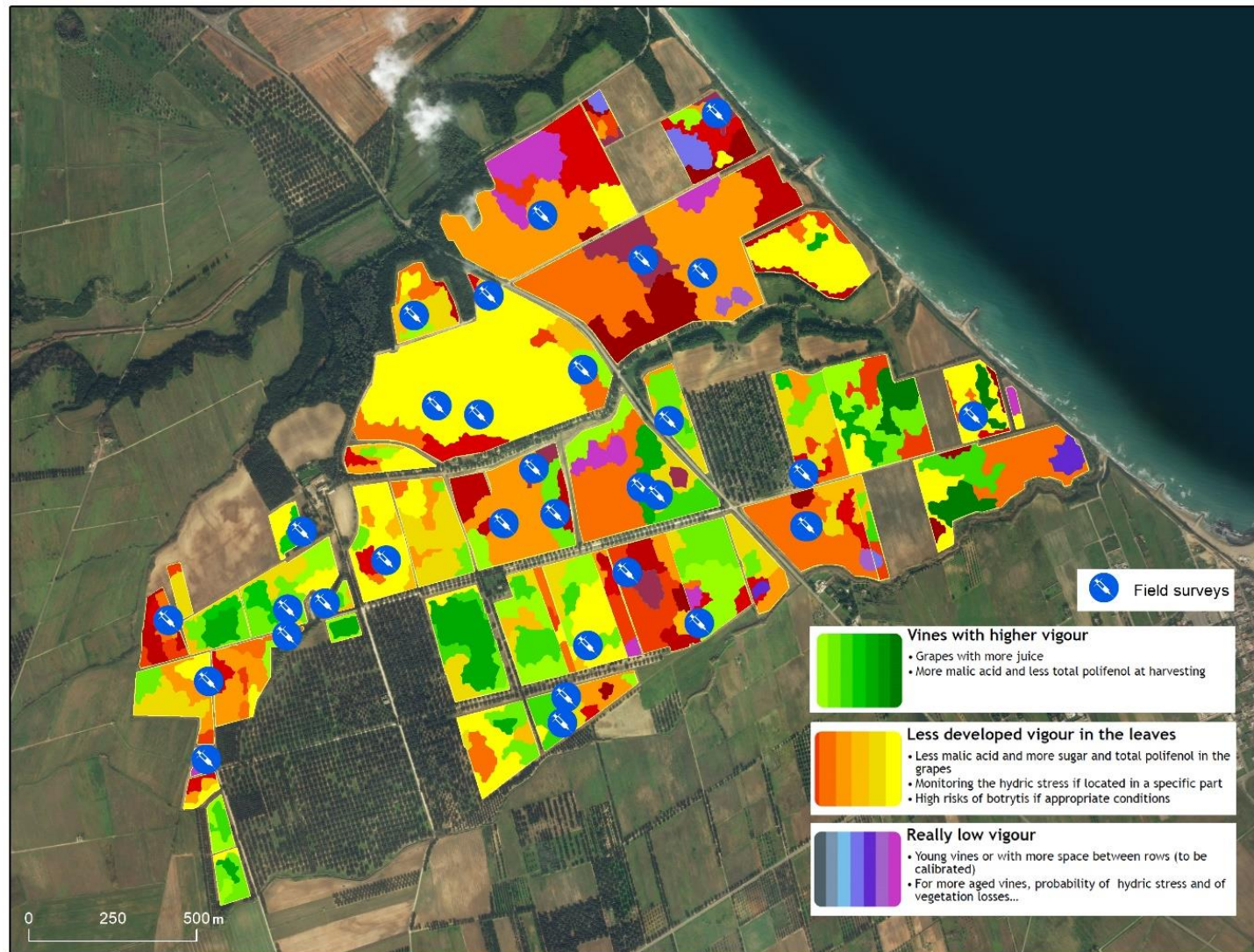
Green Cover Fraction

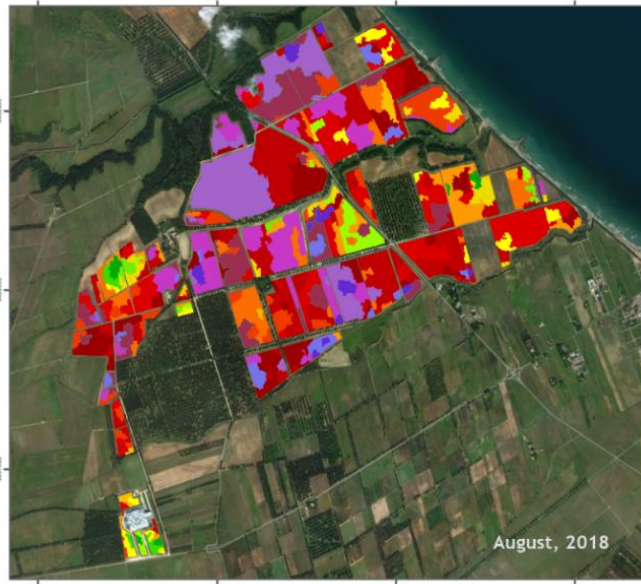
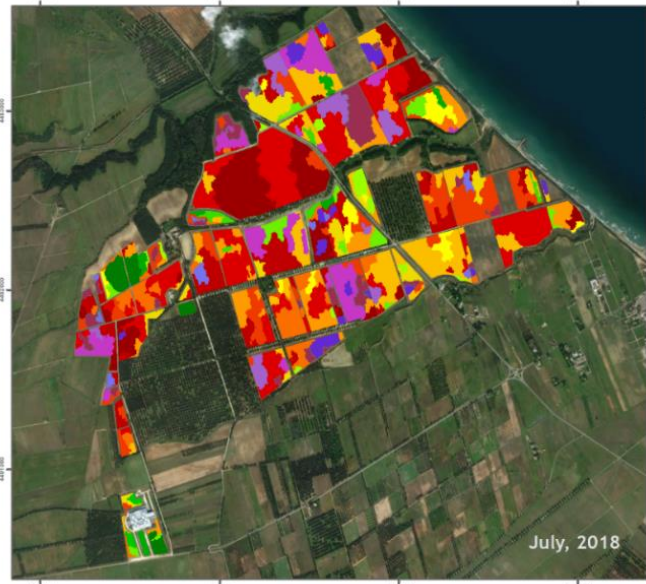
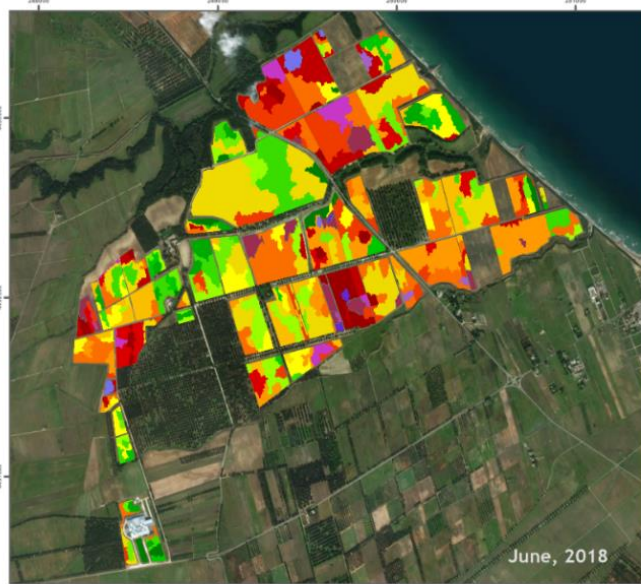
Image SPOT7_PAN - 24/07/2017 - resolution 1.5 m

Level	% Area	Area (ha)
0.128	66.6	0.191
0.263	33.4	0.096



Integrazione con dati in campo





Location

Local projection: UTM_Zone_34 Datum: WGS_1984
Scale 1: 25.000 for A3 print

Description

Maps of the vegetation development realized within EUGENIUS H2020 project. These maps are based on four satellite images taken on April, June, July and August, 2018.

The infrared component allows to measure the foliar surface of the vine in each part of the plot and its characteristics (vigour, heterogeneity).

The service, named Oenoview® (by Terranis), allows to segment the vineyards according to the qualitative potential of each plot.

Legend

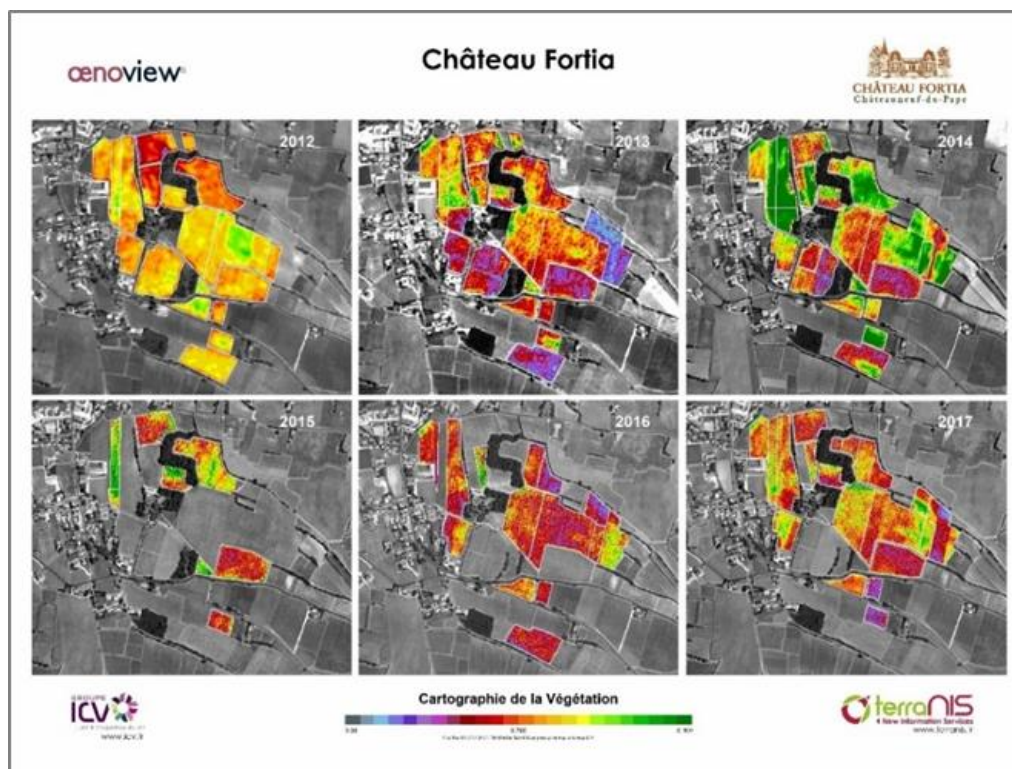
- Vines with higher vigour**
 - Grapes with more juice
 - More malic acid and less total polifenol at harvesting
- Less developed vigour in the leaves**
 - Less malic acid and more sugar and total polifenol in the grapes
 - Monitoring the hydric stress if located in a specific part
 - High risks of botrytis if appropriate conditions
- Really low vigour**
 - Young vines or with more space between rows (to be calibrated)
 - For more aged vines, probability of hydric stress and of vegetation losses...



Progetto realizzato con finanziamento della Regione Puglia - Legge regionale n. 55/2018 "Avviso pubblico per la presentazione di Progetti pilota per la promozione e lo sviluppo dell'Agricoltura di Precisione"

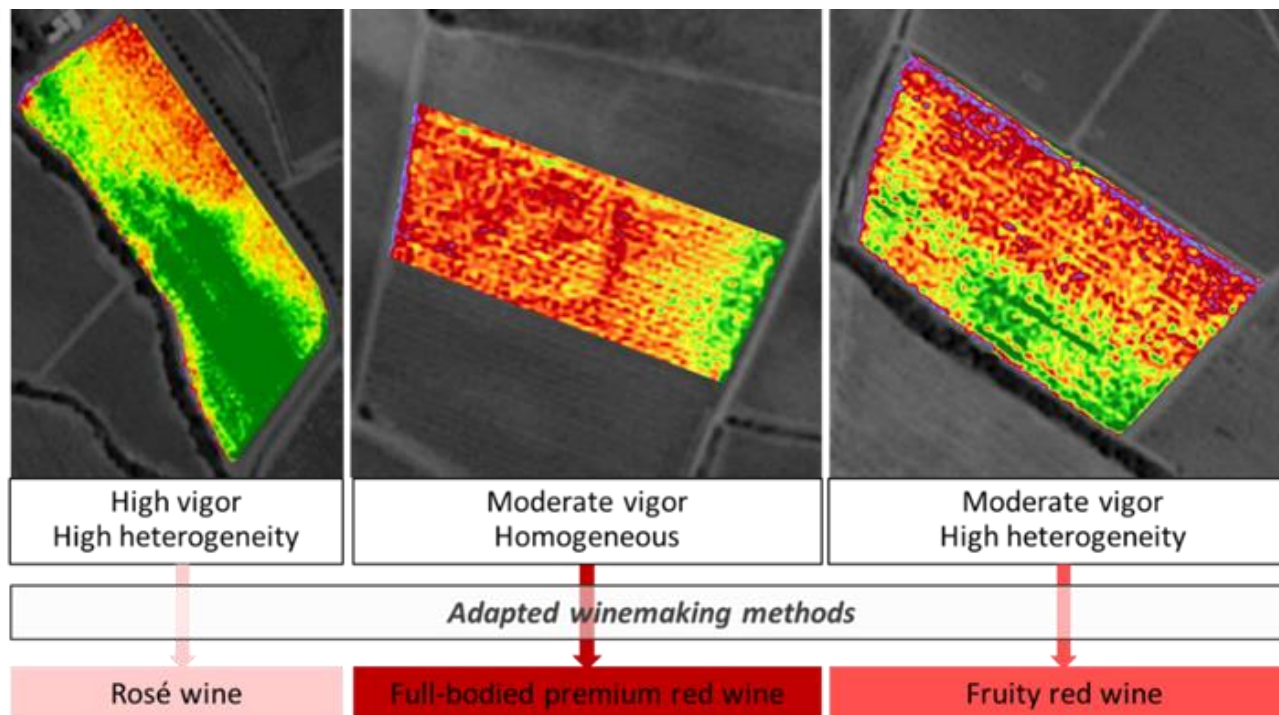


Serie storica



Rhone - Châteauneuf-du-Pape Château Fortia

Selezione lotti



Languedoc
Aziende vitivinicole:
Vinovalie
Canet
Ouveillan
Les Grands Chais
de France

...



Location: ALSIA site



Local projection: UTM_Zone_34 Datum: WGS_1984
Scale 1: 15.000 for A3 print




Description

Map of the vegetation development realized within EUGENIUS H2020 project. This map is based on a satellite image taken on August, 2018.

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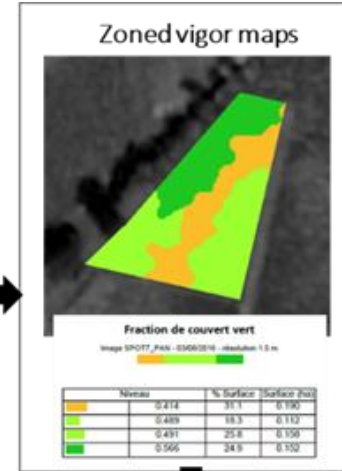
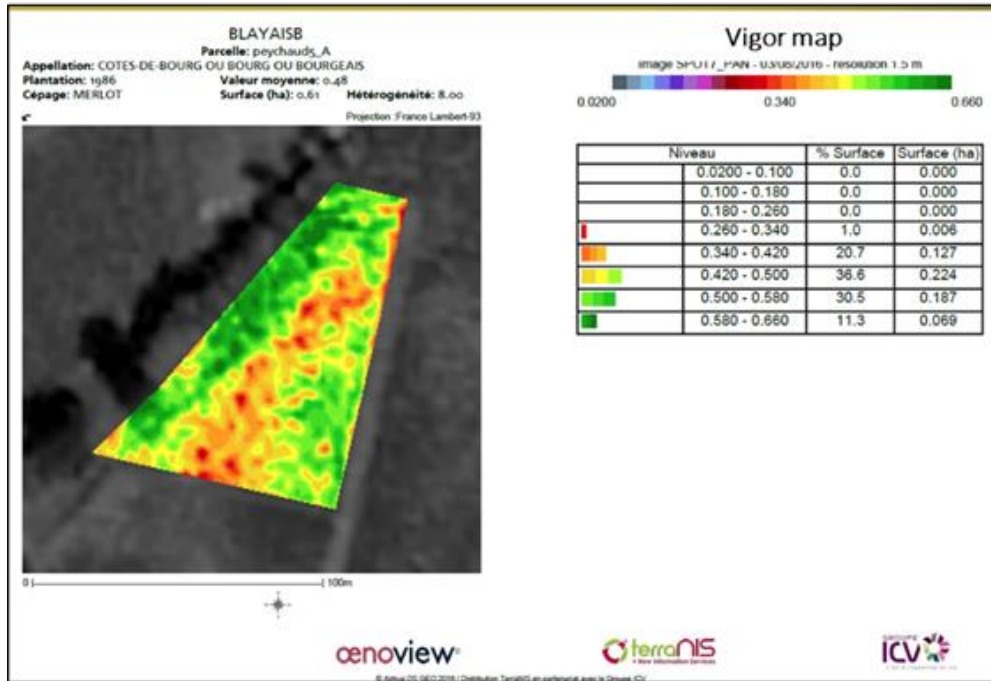
The service, named Denoview® (by Terranis), allows to segment the vineyards according to the qualitative potential of each plot.

Legend

- 
Vines with higher vigour
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Supporto alla concimazione



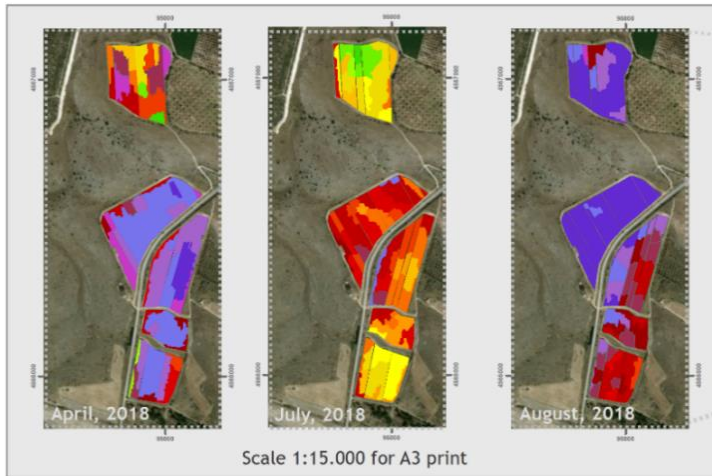
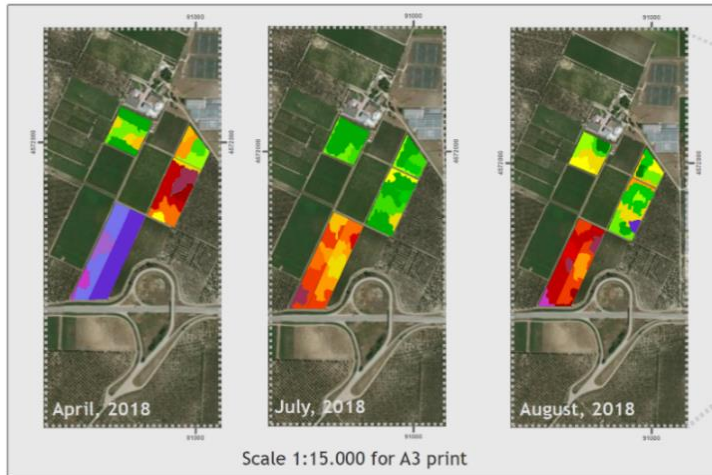
Rational fertilization scheme



GCF: Grands Chais de France
 33 aziende, 1.500ha

Bordeaux:
 Châteaux Castel
 Château Fayau

Ottimizzazione
10 - 30 %



Location RIVERA site



Local projection: UTM_Zone_34 Datum: WGS_1984




Description

Maps of the vegetation development realized within EUGENIUS H2020 project. These maps are based on three satellite images taken on April, July and August, 2018.

The infrared component allows to measure the foliar surface of the vine in each part of the plot and its characteristics (vigour, heterogeneity).

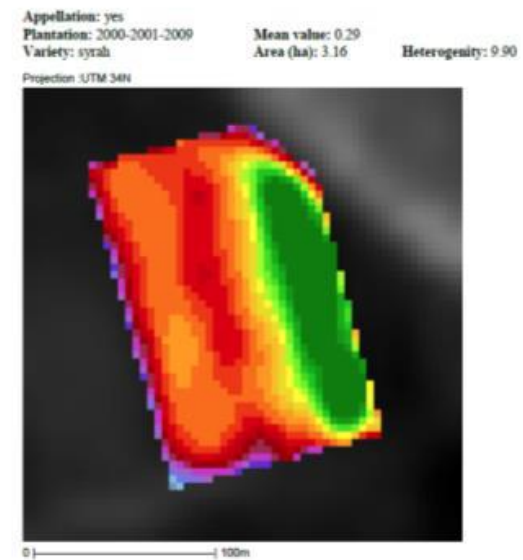
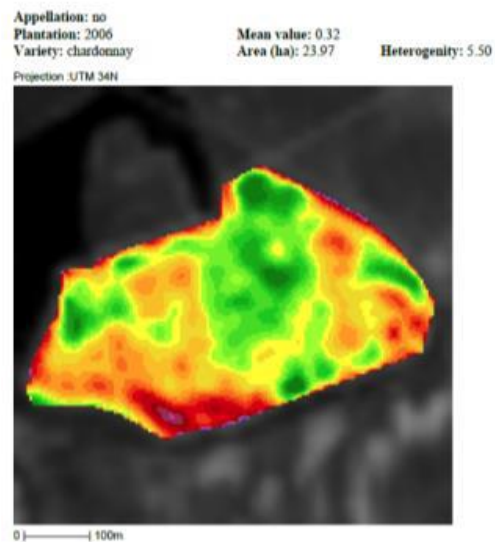
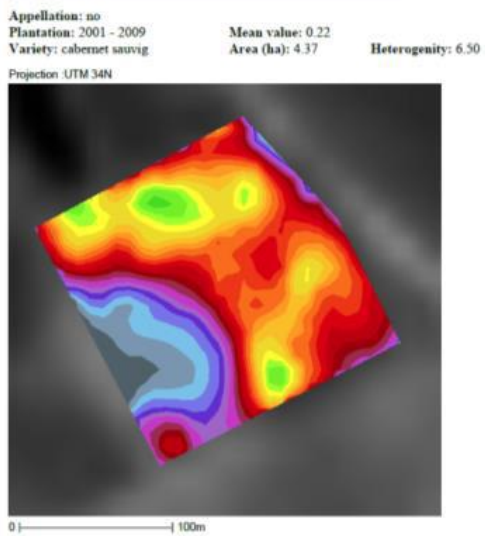
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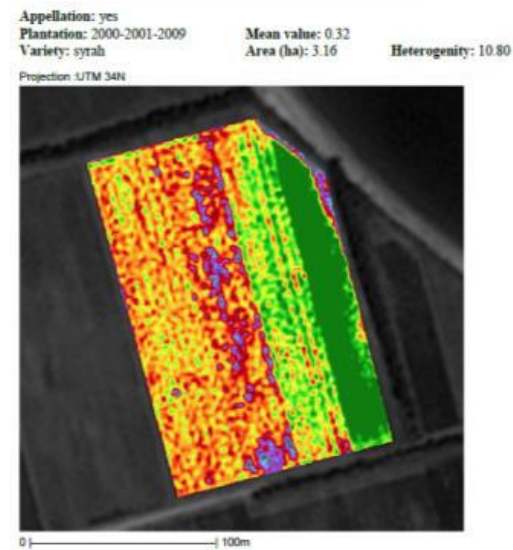
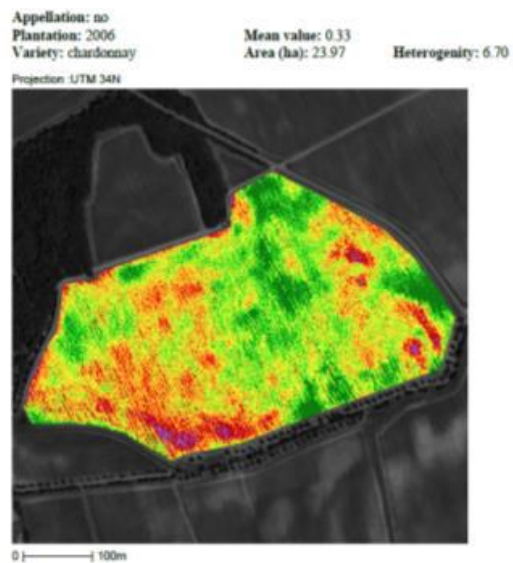
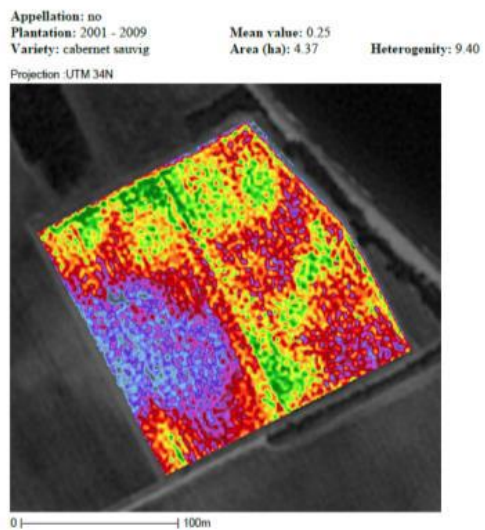


Sentinel 2



x400

Spot 6



Green Cover Fraction (Area)

- High : 3.4299 (7%)
- Low : 10.0937 (19%)
- Medium : 14.8348 (29%)
- Medium-to-High : 3.2303 (6%)
- Medium-to-Low : 20.2182 (39%)

GREEN COVER FRACTION (AVERAGE)

VARIETY (AREA)

- Aglianico
- Bombino Bianco
- Bouvet
- Cabernet
- Chardonnay
- Fiano
- Montepulciano
- Nero di Troia
- Sauvignon
- Syraz
- Vinier

FIELD

RR2

ROOTSTOCK

110 R

ROOTSTOCK

110 R

SUMMARY

ID Parcel	Estate	ID Field	Variety	Rootstock	GCF Value	GCF Class	Heterogeneity Value	Heterogeneity Class
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.217821	Low	4.06109	Homogeneous
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.213054	Low	4.06109	Homogeneous
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.241108	Medium-to-Low	4.06109	Homogeneous
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.241108	Medium-to-Low	4.06109	Homogeneous
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.266194	Medium-to-Low	4.06109	Homogeneous
AGRIDE10	AGRIDE10	R6	Cabernet	420 A	0.285081	Medium-to-Low	4.06109	Homogeneous
AGRIDE11	AGRIDE11	R7	Fiano	nd	0.385517	Medium	6.99408	Heterogeneous
AGRIDE11	AGRIDE11	R7	Fiano	nd	0.404898	Medium	6.99408	Heterogeneous
AGRIDE11	AGRIDE11	R7	Fiano	nd	0.431660	Medium	6.99408	Heterogeneous
AGRIDE11	AGRIDE11	R7	Fiano	nd	0.289068	Medium-to-Low	6.99408	Heterogeneous
AGRIDE12a	AGRIDE12a	R8	Aglianico	Kober 5BB	0.521744	Medium-to-High	7.82943	Very heterogeneous
AGRIDE12b	AGRIDE12b	R8	Aglianico	Kober 5BB	0.515685	Medium-to-High	6.88055	Heterogeneous

Showing 1 to 150 of 209 items



Considerazioni sull'utilizzo del servizio

- Utilizzo nel breve periodo
 - Disporre delle informazioni a metà fine luglio è utile per tutte le attività di zonazione
 - Ottimizzare i campionamenti
 - Stimare il livello qualitativo (quantitativo) della produzione
 - Disporre di informazioni utili alle pianificazione e implementazione di pratiche agronomiche (irrigazione, concimazione, lotta)
- Utilizzo a lungo termine
 - Disporre di serie di dati di almeno 2-3 anni può supportare le gestione del vigneto individuando criticità sistematiche

Lesson learned: L'Azienda Agricola

L'azienda agricola deve:

- avere un obiettivo chiaro da raggiungere
- essere organizzata per accogliere il cambiamento
- disporre di risorse adeguate (e dimensioni)



"Dio non ha fatto
che l'acqua,
ma l'uomo
ha fatto il vino"

Victor Hugo



Grazie per l'attenzione