GARDA WINE STORIES
Lazise, 8 – 10 June 2022

Functional biodiversity in Garda Doc vineyards

Role of cover crop with nectariferous plants

Lorenzo Tosi

AGREA CENTRO STUDI

Progetti di ricerca

Centro di Saggio

Consulenza

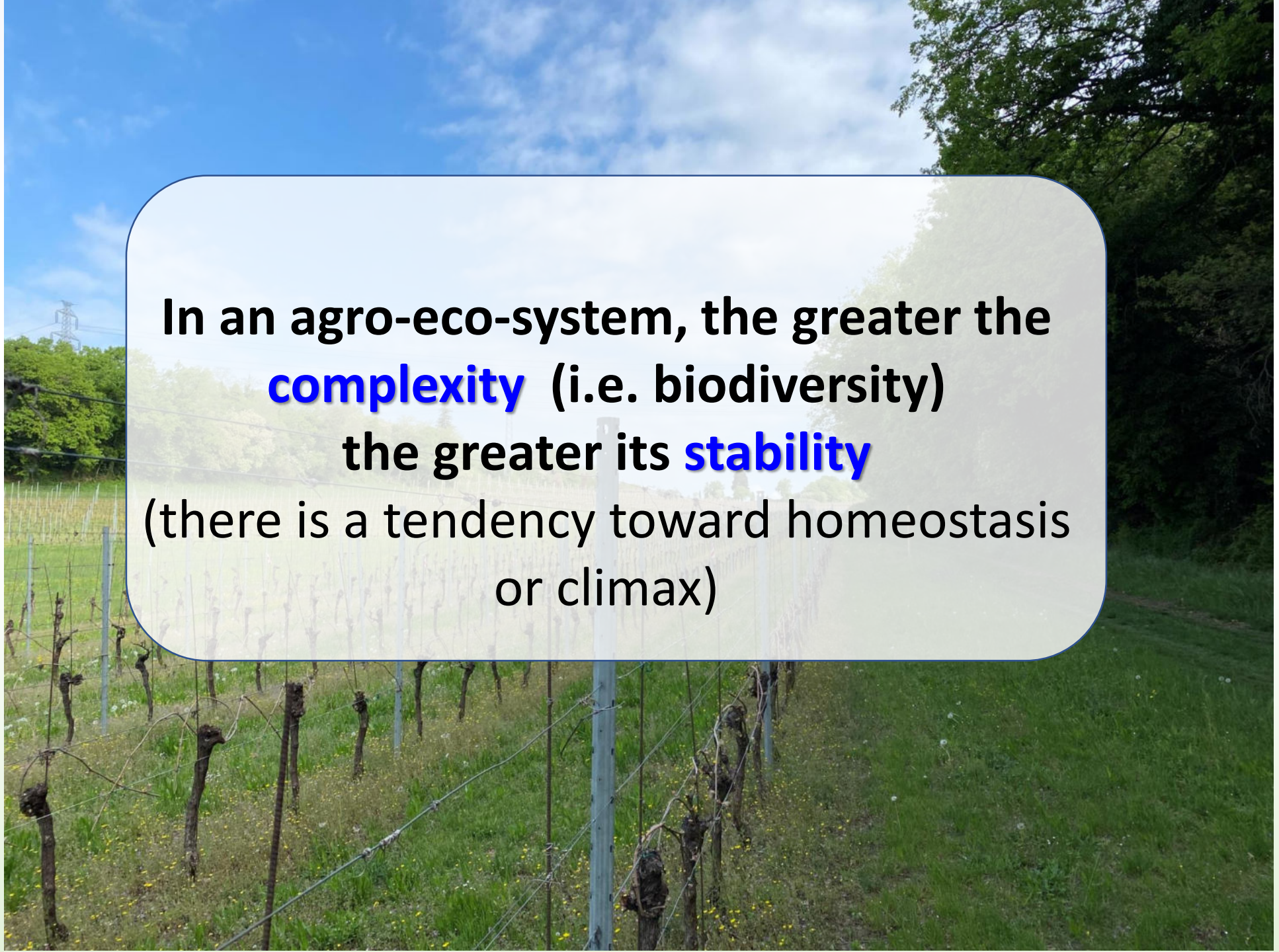
Formazione e divulgazione

… what is Biodiversity ?

Biodiversity, in ecology, is the **variety** of living organisms in their different forms, in a given environment

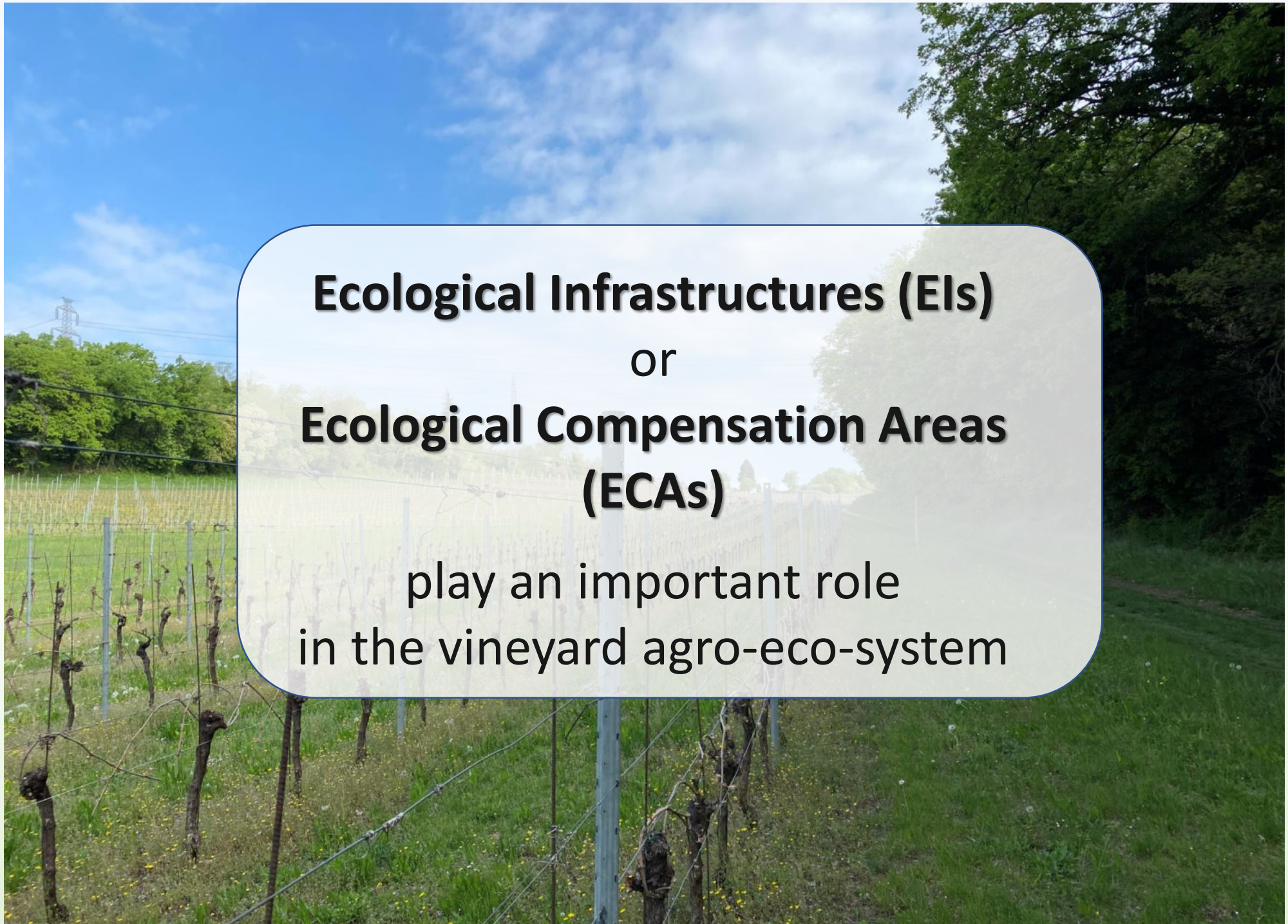
… and what is Functional Biodiversity?

Functional Biodiversity is the part of agroecosystem biodiversity that can be useful to the farmer (e.g., organic pest control).



In an agro-eco-system, the greater the complexity (i.e. biodiversity) the greater its stability

(there is a tendency toward homeostasis or climax)



Ecological Infrastructures (EIs)

or

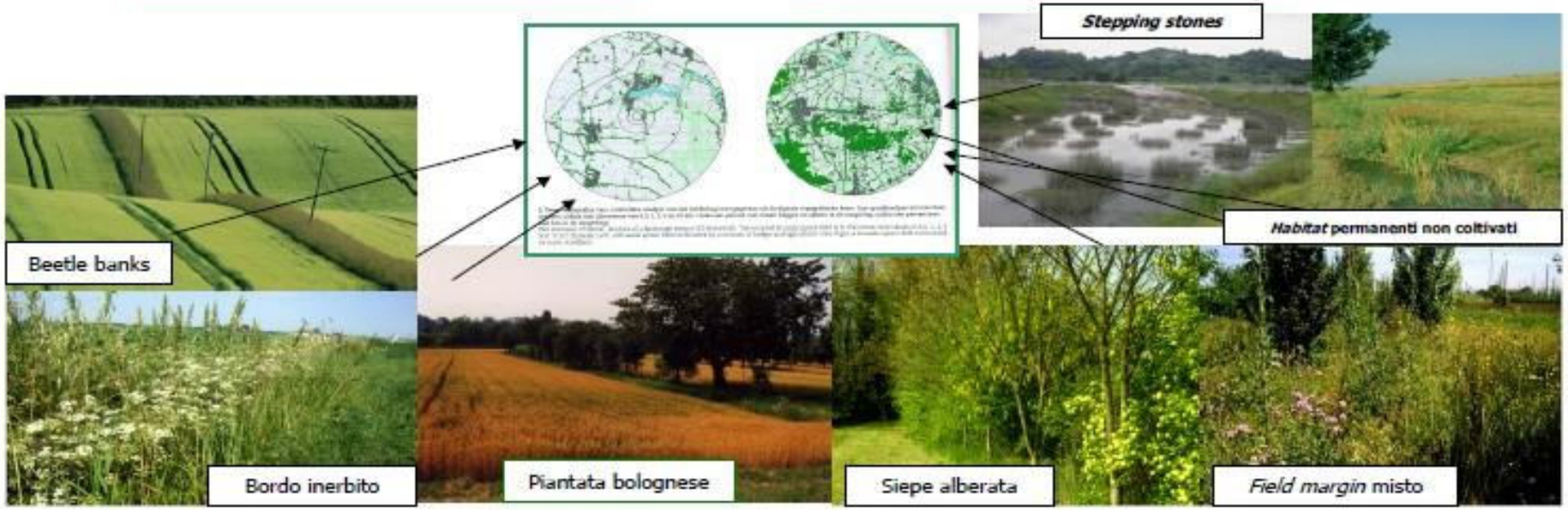
Ecological Compensation Areas (ECAs)

play an important role
in the vineyard agro-eco-system

Infrastrutture ecologiche (IE)
o
Aree di compensazione
Ecologica (ECA)

Componente vegetale spontanea e "non produttiva" (*non-crop plants*) degli agroecosistemi

Vengono incluse anche piante nettarifere seminate portatrici di benefici alle colture adiacenti (lotta biologica, impollinazione) e le piante trappola



Burgio, 2014

Nectariferous plants

- Used in **agroecology** for a better organic control.
- Feeding of parasitoids and predators, increased longevity and fecundity.
- Nectariferous plants and grassed borders should be promoted in light of the "**selective plant**" concept, which favours beneficial insects without benefiting phytophagous insects.

… in the vineyard

Can nectariferous plants in the vineyard enhance functional biodiversity?

Different cover crops and/or their combinations can increase and stimulate the presence of useful entomofauna in the vineyard system

- ✓ Attraction of useful species
- ✓ Refuge site
- ✓ Auxiliary insects retention site


Spontaneous grassing of mowed vineyards


Plant mix

PROGETTO

TITOLO:

Copertura vegetale con piante nettarifere per potenziare la Biodiversità Funzionale nell'agro-eco-sistema vigneto

PAROLE CHIAVE: biodiversità funzionale, inerbimento controllato, piante nettarifere.
COMMITTENTI: Consorzio Garda DOC, Via Bassa 14 - 37066 Sommacampagna (VR)
RESPONSABILE: Marchesini Enrico, Agrea Centro Studi
REFERENTE DEL PROGETTO: Fiorini Paolo, Presidente Consorzio Garda DOC
DURATA DEL PROGETTO: 3 anni
PRIMO ANNO: 2022

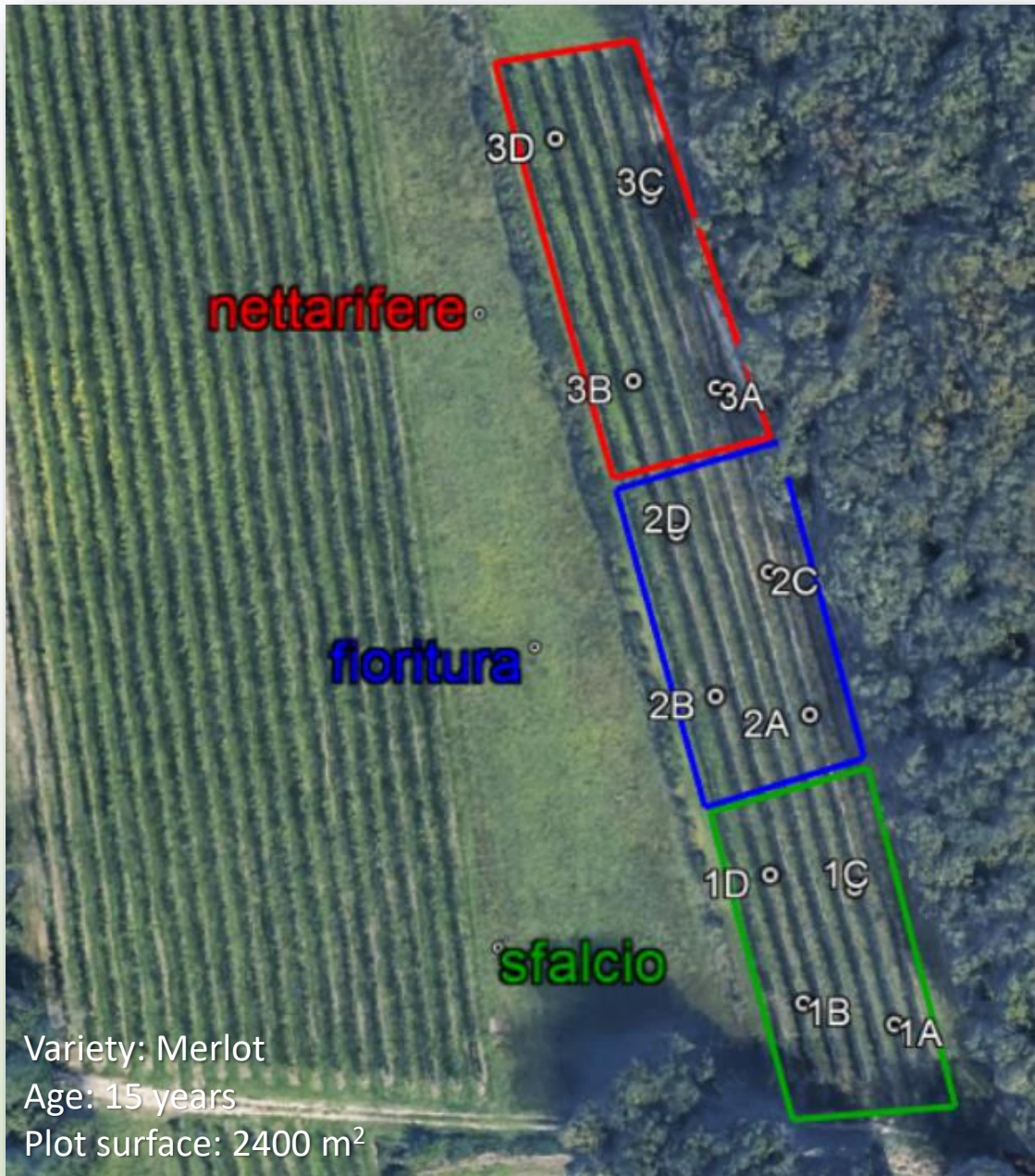
Project goals

1. **To evaluate** some biodiversity indexes **for the natural containment of harmful arthropods** in an integrated pest control vineyard in the Garda DOC wine production area.
2. To **compare plots** with **spontaneous plant cover** (cover crop) **not mowed** until full bloom with plots frequently mowed in the inter-row.
3. To evaluate the effect of the use of **nectariferous plant mixtures** for controlled grassing in the inter-row on phytophagous species and useful arthropods in the agro-eco-system of the vineyard.

GARDA DOC

… the experimental field

No	Name	Cover crop ()	Management
1	Mowing	Spontaneous grassing	Frequent mowing (every 10-15 days)
2	Flowering	Spontaneous grassing	Rolling only **after flowering**
3	Nectariferous plants	Controlled grassing Nectariferous plants combination	Rolling **only** after flowering

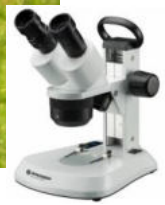


- **Fall seeded cover crop mixture** containing

Leguminous plants	Vetch, broad bean, crimson clover
Poaceae	Oat
Polygonaceae	Buckwheat
Brassicaceae	Alyssum
Boraginaceae	Phacelia

- **Light rolling** is to be preferred over chopping after flowering, when the plants have reached a conspicuous plant mass, in order to lodge the plants while still keeping them viable

… Sampling methods

Type of sampling	Type and number of sampling
Chromotropic traps 	Yellow with two adhesive surfaces. Replacement every 15 days
Entomological aspirator 	Adapted Stihl SH 56/86, 1 minute of suction in 20 m of inter-row length
Phytoseid mite survey  	Sampling of 10 leaves per repetition

… first observations

1	sfalcio	Inerbimento spontaneo	Sfalci frequenti (ogni 10-15 gg)

2	fioritura	Inerbimento spontaneo	Rullatura solo **dopo fioritura**

… other effects of **selective cover crop.**

… and what is Functional Biodiversity?

- **soil**
  - better texture
  - organic matter increase
  - microbioma enrichment
  - less erosion (vineyards with a slope)

- **conservative organic control**

  natural balance among organisms

- **landscape**

  enhancement of the **aesthetic value** of the wine estate and of the area in general

- **Ecological Infrastructures** alone cannot solve all phytosanitary problems, but are a key element in sustainable **defence strategies**

It is important to foster a **systematic approach** , **harmonising Functional Biodiversity and Landscape Management with other sustainable defence methods**

«…*biological balances work* ***silently*** *and we realize how important they are only when they … are gone»* (Van Lenteren, 2006)


Thank you for
your attention