

# Braccessa

## Tuscany (Italy)

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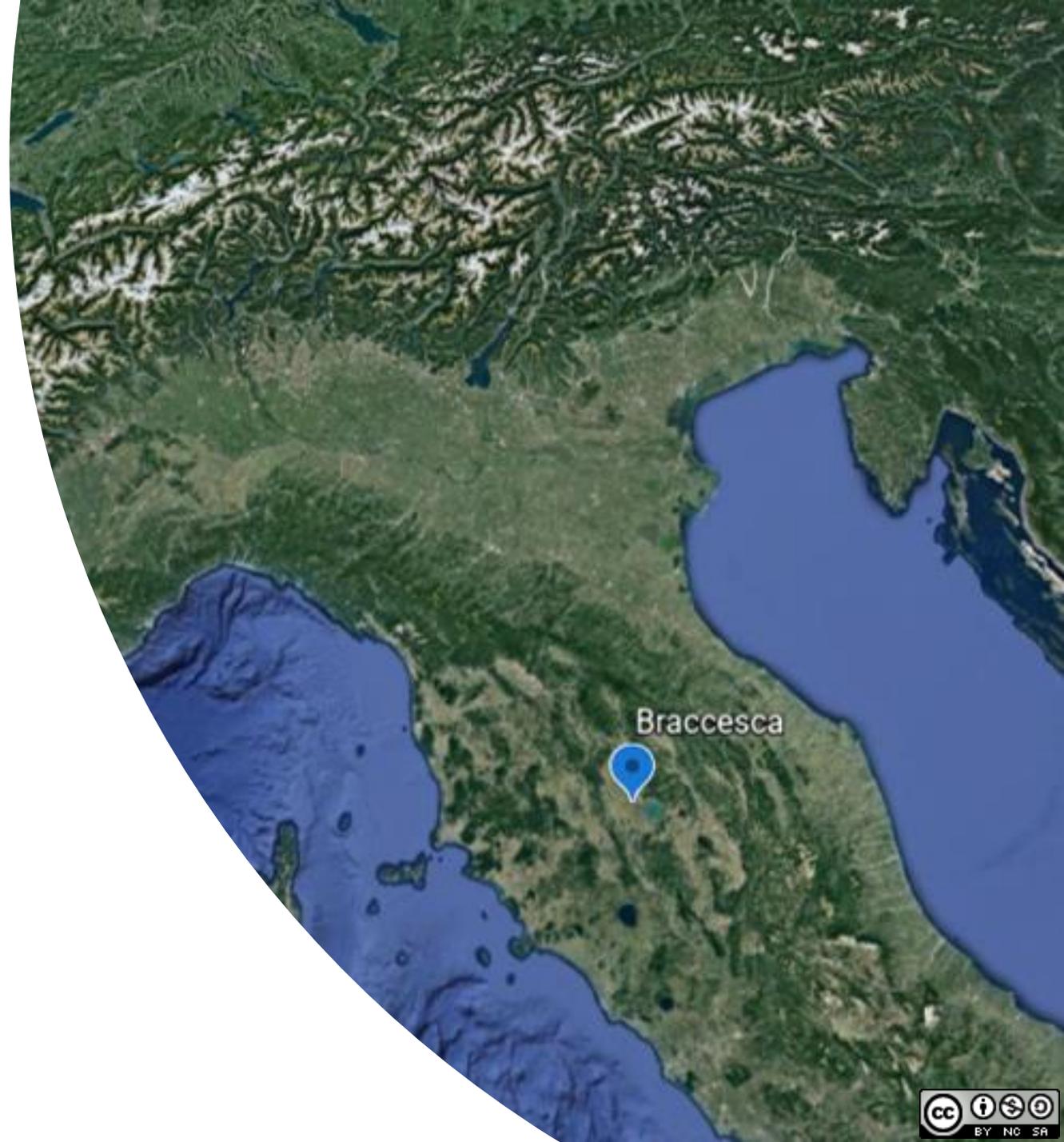
### EXPERIMENT GOALS

To assess in a long-term perspective the effectiveness of the biochar soil amendment in a vineyard, in terms of:

- soil carbon sequestration and soil fertility;
- increasing soil water retention;
- vineyard ecophysiological parameters and productivity;
- - pattern of polycyclic aromatic hydrocarbons in soil.

### DURATION OF THE EXPERIMENT

- Started on 2009 - ongoing



## SITE DESCRIPTION

The field experiment was done in a vineyard at the “Marchesi Antinori – La Braccasca Estate” (Lat. 43°10'15"N; Long. 11°57' 43"E; 290 m a.s.l.), planted in 1995 (cv. Merlot, clone 181; rootstock 3309 Couderc). The trellis system is a single curtain with plant-row spacing of 0.8 m and 2.5 m; rows orientation is East–West. The vineyard is not irrigated. The soil is a shallow acids sandy-clay-loam (USDA, 2005) textured. A randomized plot experiment, with three treatments and five replicates was setup in 2009. Each plot, 15 in total, had a surface area of 225 m<sup>2</sup> (7.5 m in width and 30 m in length) including 4 vineyard rows and 3 inter-rows. The treatments were: a single biochar application at a rate of 22 ton ha<sup>-1</sup> in 2009 (B); two biochar applications at a rate of 22 ton ha<sup>-1</sup> each, in 2009 and 2010 (BB); and a control (C). Biochar was applied in the inter-row space of the vineyard using a spreader and it was incorporated into the soil using a chisel plow tiller to 0.3 m depth.

## BIOCHAR AND ITS APPLICATION IN THE FIELD

The biochar applied was a commercial charcoal provided by “Romagna Carbone s.n.c.” (Italy) obtained from orchard pruning biomass through a slow pyrolysis process at temperature of 500°C. The biochar at the end of the pyrolysis was crushed into particles smaller than 5 cm of diameter before the soil application. Biochar porosity and pore size distribution, BET, biochar water retention and the biochar bulk density have been determined.



## MEASURED PARAMETERS

**Field conditions:** meteorological data

**Soil analysis and interactions with biochar:** periodic soil analysis, pH, water retention, soil biological index

**Biochar dynamics and matrices:** soil carbon content

**Production data:** quality and quantity of grape yield

**Plant-soil dynamics and interactions:** carbon and nitrogen soil-plant dynamics

## PLANNED ACTIVITIES OR POTENTIAL EXPERIMENTAL ACTIVITIES

The long term field experiment of Braccasca will be designed to represent an opportunity for the scientific community to test and verify the long-term effects of adding biochar to soil.



## PRESENTATION OF THE WORKING GROUP

The Braccessa field experiment was planned and done by the Biochar Group of the IBE-CNR in collaboration with the Universities of Bologna, Firenze, Insubria, Napoli and Padova with a participation of the Antinori.

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## CONTACTS

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