

## 2018 - Biogenic CO<sub>2</sub> capture

### 2018 - Fissazione di CO<sub>2</sub> biogenica

Description Denominazione	Surface area in ha Superficie in ha	CO <sub>2</sub> e capture in t CO <sub>2</sub> e Fissazione di CO <sub>2</sub> in t CO <sub>2</sub> e
<b>Biogenic CO<sub>2</sub> capture - woodland / Fissazione di CO<sub>2</sub> biogenica della foresta</b>		<b>7,133.42</b>
Chestnut / Castagno	78.86	914.90
Pine / Pino	2.40	38.72
Downy oak / Roverella	721.55	5,064.92
Turkey oak / Cerro	153.77	990.63
Mature woodland / Bosco Evo	31.54	124.24
<b>Biogenic CO<sub>2</sub> capture – woody crops / Fissazione di CO<sub>2</sub> biogenica delle colture arboree</b>		<b>253.42</b>
Vineyards / Vigneto	307.87	143.23
Olive groves / Oliveto	271.90	1,109.67
Fruit trees & bushes/ Frutticoltura	0.87	0.52
<b>Biogenic CO<sub>2</sub> capture - soil / Fissazione di CO<sub>2</sub> biogenica del suolo</b>		<b>1,381.28</b>
Soil / Terreno	858.47	1,381.28
<b>Total / Totale</b>		<b>8,768.28 t CO<sub>2</sub>e</b>

Part of the detailed calculation contained in natureOffice's report on Fattoria La Vialla's CO<sub>2</sub> balance

**The Fattoria's woodlands and high forest silviculture -** Cultivating high forest trees (oak, pine, fir) is a choice made by those who wish to take care of woodlands, thinking of the landscape, fruition by tourists and the use of timber with a very long lifecycle (around 80 years). Not all of La Vialla's woodlands are cultivated as high forests, some, those further from the farmsteads and the main unpaved roads, are coppiced. The trunks of these trees are not so tall and they have a shorter lifecycle: they can be "harvested"/cut, every 18/25 years. Forest renewal is fundamental, for its own health and for the maintenance of hillsides.

**What tasks are carried out, in which season and why -** Work to be carried out in the woodlands requires long-term planning. We're already programming for the next 10 years. At the Fattoria we try to concentrate the work during the winter months, when the "agriturismo" (= farm hospitality structure) is closed, although tasks for conversion and thinning are done all year round. We check the trees' health and, when necessary, they are renewed. Fire surveillance is organised in periods at risk, normally from the end of June until October (about 40 years ago there was a vast fire in one of La Vialla's pine forests... the woodland has now recovered completely).

**Woodlands as a renewable resource -** As the trees are thinned, the timber is used to build, renovate and repair the Fattoria's farmhouses and other buildings (such as the eco-friendly Barrique cellar, built in 2011). The wood is used to burn in fireplaces, and in ovens to bake biscuits and bread; it's also used for fences, vineyard posts, and signposts for the farmhouses and roads. Shrubs are also used: for example besom heath, to create roofing, on shelters over tables and in the car parks.

**The species that grow in our woodlands -** The most common trees are: downy oak, Turkey oak, chestnut, manna ash, black pine, maritime pine, Italian stone pine, and hop hornbeam. The principal shrubs are blackthorn, Cornelian cherry, common dogwood, broom, juniper and heath. At the Fattoria we have the following types of forest: downy oak and Turkey oak woodland, with heath and with maritime pine; sub-Mediterranean acidophilous Turkey oak-dominated woodland, with heath; chestnut-dominated woodland, both mesophytic and acidophilous, on sandstone; neutro-acidophilous black pine woodland; submontane fir woodland; mesophytic hop hornbeam-dominated woodland with siliceous substrates.

**The fauna -** La Vialla's woodlands don't just give life and a home to countless plants, fungi and flowers, but also to various animals: a great many birds, roe deer, rabbits, fallow deer, porcupines, wild boar and, apparently, even... wolves! More than 230 hectares are "Zona di Rispetto Venatorio" (= nature reserve in which hunting is prohibited) designated for the conservation, enhancement and possible reintroduction of small wild animals, such as hare, pheasants and grey partridges.





**How do trees absorb CO<sub>2</sub>?** Trees grow with the use of natural elements: they create molecules of wood, "consuming" water, energy from the sun and carbon dioxide (CO<sub>2</sub>) found in the air. Therefore, through photosynthesis, the tree naturally subtracts CO<sub>2</sub> from the atmosphere. This process is positive for the planet and for its inhabitants: the CO<sub>2</sub> "stolen" from the atmosphere would otherwise accumulate and create a sort of "blanket", thus increasing the greenhouse effect and its consequences. 14% of the carbon is "stored" by the roots, the rest by the wood: dry wood is made up of approximately 50% carbon, 43% oxygen, 6% hydrogen, 1% nitrogen and other elements.

**How much CO<sub>2</sub> can a tree absorb?** It depends on the type and age of the tree, and on the environment in which it grows. A species with a tall trunk, for example, absorbs more than one with a short trunk, an "adult" tree more than a "young" one; the denser the tree's wood is, the more CO<sub>2</sub> it assimilates... for example an oak absorbs 35% more than a fir tree. A medium-size tree, which has reached maturity and grows in a temperate climate, in an urban (therefore stressful) environment, on average absorbs between 10 and 20 kg of CO<sub>2</sub> per year. The same tree growing in a wood (better still a high forest) or in any case in a natural environment that's suitable (where roots can grow freely, soil life is vibrant, in a place with less atmospheric pollution), will absorb between 20 and 50 kg of CO<sub>2</sub> per year (for one hectare of forest that's around 9.2 tonnes/year of CO<sub>2</sub>e). This alone is sufficient to explain the great importance of safeguarding our woodland heritage and every tree and plant, even the most humble.

**Another few words:** Along with the care and maintenance of "its" woods (over 900 hectares), Fattoria La Vialla, with the Famiglia Lo Franco Foundation, follows various reforestation projects all over the world: 29,213 trees have been planted in various small projects, throughout Africa, with the TreeSister charity; the Fattoria funds 8 vegetable gardens, once more in Africa, through the Slow Food Terra Madre project; together with natureOffice, it has established a school vegetable garden in Togo. Lastly, La Vialla supports a large preservation and reforestation project in Germany (La Vialla's tracking ID on the website [natureoffice.com](http://natureoffice.com) is IT-101-131357).





# La Vialla's CO<sub>2</sub> Balance

Thanks to the woodlands (988.12 ha) and their capacity to absorb great quantities of CO<sub>2</sub>, to the various other crops (olive groves - 271.90 ha, vineyards - 307.87 ha, fields - 858.47 ha), to the healthy, vital, biodynamic land (which fixes much more CO<sub>2</sub> in the soil than land cultivated with conventional methods) and considering the numerous environmental projects, Fattoria La Vialla is certified as a "carbon neutral" company. Calculating a company's environmental footprint is complex, because there are many factors that influence nature, however it is also useful to see, year after year, which sectors can be improved.

Since 2014, every year the Fabbrica del Sole, along with the University of Siena's Department of Biotechnology, calculate the Fattoria's CO<sub>2</sub> emissions, from which they subtract the emissions avoided (for example, through use of the photovoltaic plant), the compensation through eco-sustainable projects, and the capture, that's to say absorption, of CO<sub>2</sub> in the soil. The latter is one of the many "superpowers" of biodynamic agriculture: as time goes by the organic matter in the soil increases and worms, fungi, insects and microorganisms - a big underground micro-cosmos - transform the biomass (CO<sub>2</sub>, leaves, plants, dead creatures) into humus, into... life!

Thanks to all this, since the 2018 balance sheet, the quantity of CO<sub>2</sub> fixed in the soil or avoided by the Fattoria exceeds the quantity of CO<sub>2</sub> emitted by the production processes, for a total of 5,282.43 tonnes of CO<sub>2</sub>e... and we're proud to be able to say that La Vialla, as of 2020, is one of the first companies to be certified by natureOffice as "climate positive"



So La Vialla doesn't have a negative environmental footprint, but actually helps improve the ecosystem and the climate.

