



GOOD PRACTICE DESCRIPTION FORM

Title	Agroforestry
Proposer subject	Provincia autonoma di Trento (PAT)
Short description of the practice	<p>Agroforestry is a type of integrated crop that combines traditional agricultural techniques with those of forest management, combining woody and perennial plants with herbaceous crops and/or animal husbandry, to create more efficient, productive and healthy land use systems, diversified by type and sustainability. The integration of trees, shrubs, annual crops animal into vineyard are ancient practices in the Mediterrean area. Can be distinguished various types of agroforestation: the silvoarable systems are those in which tree species (wooding plants, fruiting plants or other) and herbaceous crops are developed. Forestry and pastoral systems combine livestock and arboriculture (for wood or fruit). Then there are the linear systems, in which hedges and the like, located at the edges of the fields, perform a function of protection for agro-ecosystems and of "defence" for agricultural surfaces. The so-called riparian belts are those in which tree and shrub species are placed at the banks of waterways, to protect them from degradation, erosion and pollution. Finally, there are cultivations in the forest, mostly mushrooms, berries and other non-wood products.</p> <p>With this practice, is placed emphasis on long-term agroforestry land use practices and woodlot management satisfying the tree criteria: intensive, interactive and integrate.</p>
Aim of the best practices	<p>Optimizes production while reducing land consumption at the same time; it guarantees greater diversification of production, protection of the soil from erosion and pollution and increased fertility and "storage" of carbon within the soil. Furthermore, there is a greater stabilization of the soils, which in cascade brings a mitigation of climate change and adaptation, as well as benefits for the biodiversity of the territory. Other positive effects of agroforestry are characterized by windbreaks, by the recovery of the biomass obtained (which can be used for energy purposes), by the creation of the so-called "buffer strips", which can decrease the runoff of surface waters. In add increase the stability of the slopes, support the main crops, shading and mitigating extreme temperatures, protection from hail, supplementary income supply, creation of landscape and natural barriers, contrast to harmful insects and pests, increase in biodiversity and organic matter soil.</p>
Suggestion for implementation	<p>Farm animals can play a key role in agroforestry. For example, geese in the vineyard, free to wander among the rows in search of grass at ground level, which they feed on. Geese keep the vineyards healthy, without damaging them, keep the soil "clean" from weeds, naturally fertilize the soil with their manure, feed without being fed by chemical feed and save the farmer numerous living costs. A virtuous and concrete Italian example of the use of geese in the vineyard. If it is true that geese are a cure-all among the vineyards, the hens have proved to be precious for the olive trees. Their continuous scratching has the dual function of eliminating insects and harmful pests (in particular the feared oil fly) and gently stirring the soil, oxygenating it. In addition, the natural cycle of the absorption of animal dejections by the soil provides a 100% natural fertilizer and at no cost.</p>



Below you can find two research experiences about Agroforestry. They have been presented at 4th World Congress on Agroecology in 2019. Montpellier, France.

“Impacts of sheep integration on soil carbon sequestration and function in Northern California coastal vineyard system.” Kelsey Brewer, University of California, Davis. Integrated sheep-vineyard systems (ISVS), a type of mixed agroforestry system, utilize sheep to graze resident vegetation and/or cover crops and facilitate the provision of ecosystem services for vineyard production. However, quantification of carbon sequestration and soil health impacts from livestock integration into perennial cropping systems remain unclear. We conducted a survey study of three long term (10+ years) ISVS plots to assess soil health shifts from animal integration. Our results support that ISVS has substantial potential to increase soil C storage and improve important ecosystem synergies such as microbial functioning and biogeochemical cycling.





“Diachronic study of the effect of growing trees on grapevine yield: 24 years of experience in the South of France. Marie Gosme .Montpellier. 4th world congress on Agroforestry.” Gosme M.

Climate change. In France, there are very lot fears for winegrower, because of frost and high temperature. Therefore, Agroforestry can mitigate this problem. Effects of trees (sorb, stone pine, Italian alder, Mediterranean cypress, pear on grapevine: Night sky mask made by the trees: reduces radiative cooling at night thus reducing frost risk. Daytime shade: reduces temperature during the day, potentially reducing heat stress but as the same time there is a negative effect: reduce the photosynthesis. By this research, was observed, that in the agroforestry vineyards (2, 19%) frost is very reduced than in pure vineyard control (7, 02%). Data from: 21-24april 2017-Important Frost.

Expected Results	Soil conservation, watershed protection, long-term improvement of soil fertility, improvement of microclima, lower incidence of pests and diseases, reduction of external inputs (fertilizer, pesticides), diversification of production, reduced dependence on instability of commodity markets, diversified supply for home consumption, production of non-food-products (timber, firewood, fodder etc.), maintenance of landscape beauty and natural diversity, development of cultural traditions and experiences
Improvable or Critical Aspects	We suggest you another interesting aspect to implement to find a traditional viticultural practice concerning agroforestation forgot over the years in your country (if possible) and try to analyze and implement it in the vineyard. For example, in the past, in Italy was widespread vines grown in association with other crops (for example mulberry). In this way, the farmers produced two products, grapes and silkworm.



Bibliographic indications	<p>Lo sviluppo viticolo del Trentino. Giuseppe Ruatti, 1955 4th World Congress on Agroecology in 2019. Montpellier, France http://www.eurafagroforestry.eu https://www.agforward.eu https://cantieredelbaco.wordpress.com/</p>
References	<p>Provincia Autonoma di Trento, Euraf-agroforestry, AIAF</p>
Pictures (1/3)	<div data-bbox="384 423 1291 1032" data-label="Image">  </div> <div data-bbox="566 1046 1276 1104" data-label="Caption"> <p><i>Dro - Viti, susini, peri ed ulivi sui seminativi. (foto Ruatti)</i></p> </div> <p>Trentino, 1953 (Vines with pear, olive and plum trees)</p> <div data-bbox="389 1158 1323 1794" data-label="Image">  </div> <p>Alfalfa that invades the inter-row of the vineyard (Vallagarina, Trentino 1955)</p>



Vine grown together with mulberry, Belluno (Veneto, 2017)



Geese in the vineyard, Tuscany 2018