VINEYARDS ASSOCIATED WITH TREES AS LIVING SUPPORTS

A traditional agroforestry system in Italy and Portugal

AFINET
AGROFORESTRY INNOVATION NETWORKS

THE WHAT AND WHY

Three thousand years of viticulture

In Italy and Portugal, as well as in many European countries, there are several examples of traditional agroforestry practices. These practices were common in many rural areas until the introduction of intensive agriculture practices. Currently such systems can play a role as an example of the historical evolution of agriculture because their presence is limited due to the high labour demand, difficulty to mechanise and the limited production in comparison to specialized vineyards. In Italy, historically, the most important agroforestry systems involved olive trees (*Olea europea L.*) intercropped with cereals or combined with pasture and vines (*Vitis vinifera L.*) associated with trees as living supports. This system was also frequent in the central and northern regions in Portugal. In these regions, different tree species such as poplars (*Populus spp.*), maples (*Acer spp.*) and mulberries (*Morus spp.*) were used as living supports, chosen according to site conditions and management purposes of the farms.

Tall poplars with "married vines".
Jakob Philipp Hackert, 1973.

Traditional system in Portugal (Location: Guarda): Olive, almond and vine combined production.
Joana Amaral Paulo

HOW IS THE CHALLENGE ADDRESSED

Which trees can be associated with the vine?

Many trees can be used as living support for the vine according to the site conditions. Willow and poplar when there is water availability, elm and ash in more dry conditions, mulberry, in particular the white one, walnut for timber and/or nut production or maple as its competition with the vineyard plants is limited. Fruit trees can be used (almonds, apples etc); in this case they should be planted at the beginning of the tree row in order to facilitate the harvest of fruits. When trees are used as living supports in the vineyard, it is essential that they are pruned regularly in order to facilitate light and air access to the plants. Pollarding can also be applied so that the trees do not grow too high. Support wires are placed between the trees so that vine can grow along them.

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HIGHLIGHTS

Vines grown with tree support was a common practice in many Italian and Portuguese rural areas until the adoption of industrialised agriculture. Following this period specialised vineyards replaced most of these systems, which are now threatened. Vines with tree support, even if production is limited, can have a great cultural and aesthetic landscape value, as evidence of agriculture evolution and for this reason the system should be preserved.

Hanged vineyard system (Location: Felgueiras): hedge from agricultural plot with three distinct layers. Vegetable production underneath; vines in the middle layer supported by Poplar trees that grown in the upper layer.
Ana Tomás

ADVANTAGES AND DISADVANTAGES

Extraordinary but complex landscape

Advantages:

- The greater height of the vines, in comparison to specialised vineyards, favour growth without any particular diseases like downy mildew and botrytis
- Farm production diversification with tree products: fuelwood, fodder, fruits
- Increase in soil organic matter and improvement of other physical properties as a result of the tree presence
- Increase in biodiversity and habitat diversity which contributes to the control of pests and diseases (see AFINET factsheet nº1)
- The specific grape varieties available for these systems with organoleptic properties may allow the development of new products

Disadvantages:

- It is a labor intensive system (management and grape picking)
- Willow roots are not very deep and the trees have a rather broad crown so must be pollarded
- Mulberry is widely used in this system due to the high production of forage but is a very demanding species with high competition for nutrients with the vines
- Walnut can be used for high quality wood production and nuts but gives a particular unpleasant taste to the grapes and can overshadow the vine

FURTHER INFORMATION

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