ENI CBCMED
Cooperating across borders in the Mediterranean

Project funded by the EUROPEAN UNION

REGIONE AUTÒNOMA DE SARDIGNA
REGIONE AUTONOMA DELLA SARDEGNA

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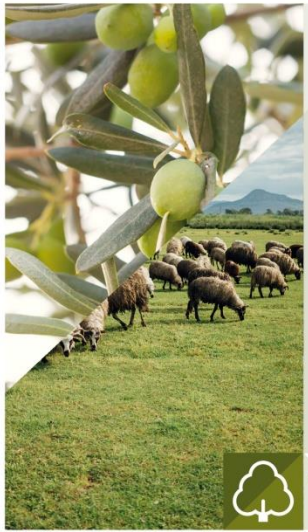

Module 2 - Agroforestry for grazed Woodlands
Course 3 - Advantages of agroforestry for grazed woodlands

Chapter 4 - Agroforestry effect on honey bees population and honey production

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1) Apiculture

Apiculture (beekeeping) can be an important agroforestry activity, because it can contribute greatly to food and income security for people living in rural areas.

In addition to honey production, bees are good pollinator insects, so their introduction into an agroforestry system can enhance cross pollination and therefore increase yield.

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1) Apiculture

Apiculture does not require full-time labor, so it can be undertaken in addition to other types of agricultural production.

Beehives require very little space, although the bees themselves can forage in a radius of 4 to 5 km.

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2) The impact of monoculture and agricultural intensification on apiculture

Monoculture, agricultural intensification and the widespread use of pesticides greatly affect the production of honey by reducing foraging, killing bees and increasing the pesticide residue in honey.

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3) The Effect of Biodiversity on Honey Production

Floral diversity in agroforestry offers a major source of pollen and nectar from forest trees, fruit trees, crops and natural vegetation.

Introducing flowering patches provides extra food and refuge for bees.

Extend the flowering time by planting and growing early, normal and late flowering varieties .

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3) The Effect of Biodiversity on Honey Production

It is wise to plant native species of wildflowers, because wildflowers provide the best nectar and pollen. Plants with a high sugar concentration are more attractive to bees.

So it is good to select species with high potential for pollen and nectar, such as marigold, lavender, yarrow, borage, chives, nasturtium, sunflower, coneflower, buckwheat, and tansy.

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3) The Effect of Biodiversity on Honey Production

Inula (*Dittrichia viscosa)* is a melliferous plant frequently visited by bees because of its abundant pollen production and long duration of flowering, especially in late summer and autumn, when other blooms are limited.

Photo by Z. Moussa

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4) Forest Honey Production

Agroforestry can provide good, healthy habitats for bees.

In addition to pollen and nectar, bees collect honeydew, sweet secretions from plant sucking insects, mainly aphids and scale insects on trees, grasses and plants. Bees use these sweet secretions to produce honeydew honey, which is also known as **forest honey**.

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4) Forest Honey Production

Forest honey contains a higher concentration of minerals and amino acids than blossom honey, as well as higher molecular weight sugars. It tends to be darker, less sweet, and less acidic, as well as more resistant to crystallization.

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4) Forest Honey Production

Turkey has established 205 honey forests that use agroforestry practices in order to support beekeeping, increase honey production and reduce environ-mental degradation, lack of food security, and deforestation.

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4) Forest Honey Production

These forest areas are free of pesticides; biological control is used instead of chemicals.
To increase beekeepers' income, Turkey is working on creating a brand for the honey produced in the Mediterranean pine forests of Turkey.
This particular honey is solely produced from honeydew secreted by the cochineal *Marchalina hellenica,* which lives on various pine species.

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4) Forest Honey Production

A study in Greece considered the potential of ground cover to provide habitats for honeybees in an olive grove. It used mixtures of sown plant species and spontaneous natural vegetation between trees.

1. Patches with sown plant mixtures attracted higher numbers of bees than native vegetation.
2. Honeybees showed a preference for white mustard *(Sinapis alba),* coriander *(Coriandrum sativum),* and borage *(Borago officinalis).*
3. Planting a mixture of patches can provide a long-lasting flowering period, which can extend the food availability for bees.

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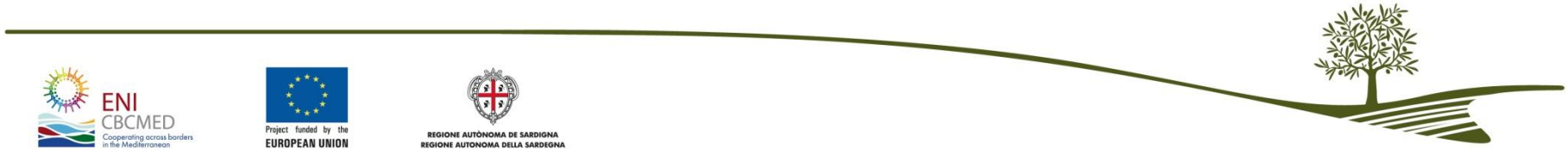

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