

# The MEDUSA Network: Conservation and Sustainable Use of Wild Plants of the Mediterranean Region

Vernon Heywood and Melpo Skoula

The Mediterranean region is one of the world's major centers of plant diversity, housing approximately 25,000 species, about half of which are endemic to the region. It is one of the most important of the eight centers of cultivated plant origin and diversity identified by Vavilov who listed over 80 crops from the region, the most important of which are the cereal crops, pulses, fruit trees, and vegetables. Also found are many native species that are economically less important including notably medicinal and aromatic plants, herbs and spice-producing plants, neglected horticultural crops such as *Eruca sativa*, *Lepidium sativum*, *Portulaca oleracea*, *Smyrniolum olusatrum*, *Scolymus hispanicus*, and ornamentals, all of which play an important role in local cultures. Some of these may well be worth consideration for further development and improvement as crops suitable for marginal areas. Many crop relatives occur in the Mediterranean basin.

The traditional use of wild plants assumes that such plant resources will continue to be available without any specific action to ensure this. However, as noted in the FAO Global Plan of Action, current programs for conservation research and development tend to neglect these species and no concerted effort has been made to ensure their continued availability in the face of the threats posed by over-exploitation caused by increasing demand, increasing human population and extensive destruction of the plant-rich habitats of the Mediterranean ecosystems.

To address these issues, a network on the "Identification, Conservation and Use of Wild Plants in the Mediterranean Region" called MEDUSA, was formally established in June 1996, by CIHEAM (Centre International des Hautes Etudes Agronomiques Méditerranéennes) and its constituent organ MAICH (Mediterranean Agronomic Institute of Chania). The Network is financially supported partly by the Directorate General I of the European Union and partly by CIHEAM.

The eventual aim of the Network is to propose methods for the economic and social development of rural areas of the Mediterranean Region, using ecologically-based management systems that will ensure the sustainable use and conservation of plant resources of the area. These plant genetic resources are of actual or potential importance to agriculture, various industries, and human health, and consequently will improve the quality of life. The particular goal of the Network, is the exploration of possibilities for the sustainable utilization of such resources as alternative crops for the diversification of agricultural production for improved product quality. This will involve a considerable amount of prior survey work regarding those wild species that are currently used in the region, whether through wild harvesting or through small-scale cultivation of semi-domesticated material.

The Network will contribute to the implementation of the FAO Global Plan of Action agreed at Leipzig in 1996, especially with regard to the conservation and sustainable use of underexploited wild species, and to the Decision XII/1 on Agricultural Biodiversity of the Conference of the Parties to the Convention on Biological Diversity.

## ORGANIZATION AND OBJECTIVES

The objectives of the Network are:

1. The identification of native and naturalized plants of the Mediterranean Region, according to use categories such as food, food additives, animal food, bee plants, invertebrate foods, materials, fuels, social uses, vertebrate poisons, non-vertebrate poisons, medicines, perfumery and cosmetics, environmental uses, and gene sources (Table 1).
2. The creation of a Regional Information System that will include: scientific plant name and authority, vernacular names, plant description, chemical data, distribution, habitat description, uses, conservation status, present and past ways of trading, marketing and dispensing, and indigenous knowledge (ethnobiology and ethnopharmacology), including references to literature sources.
3. Preliminary evaluation of the conservation status and potential utilization in agriculture of these plants as alternative minor crops.

**Table 1.** The most useful plants of the Mediterranean region as determined by the MEDUSA survey

---

**Food** (Food, including beverages, for humans only)

*Arbutus unedo* L. (Ericaceae)  
*Castanea sativa* Miller (Fagaceae)  
*Ceratonia siliqua* L. (Leguminosae) Fabaceae  
*Cichorium intybus* L. (Compositae) Asteraceae  
*Cynara cardunculus* L. (Compositae) Asteraceae  
*Ficus carica* L. (Moraceae)  
*Foeniculum vulgare* Mill. (Umbelliferae) Apiaceae  
*Fragaria vesca* L. (Rosaceae)  
*Malva sylvestris* L. (Malvaceae)  
*Pinus pinea* L. (Pinaceae)  
*Portulaca oleracea* L. (Portulacaceae)

**Food Additives** (Processing agents and other additive ingredients used in food preparation)

*Apium graveolens* L. (Umbelliferae) Apiaceae  
*Carum carvi* L. (Umbelliferae) Apiaceae  
*Coriandrum sativum* L. (Umbelliferae) Apiaceae  
*Coridothymus capitatus* (L.) Rechb.f. (Labiatae) Lamiaceae  
*Cuminum cyminum* L. (Umbelliferae) Apiaceae  
*Foeniculum vulgare* Mill. (Umbelliferae) Apiaceae  
*Humulus lupulus* L. (Cannabinaceae)  
*Laurus nobilis* L. (Lauraceae)  
*Mentha pulegium* L. (Labiatae) Lamiaceae  
*Origanum vulgare* L. (Labiatae) Lamiaceae  
*Rosmarinus officinalis* L. (Labiatae) Lamiaceae

**Animal Food** (Forage and fodder for vertebrate animals only)

*Ceratonia siliqua* L. (Leguminosae) Fabaceae  
*Lathyrus cicera* L. (Leguminosae) Fabaceae  
*Lupinus angustifolius* L. (Leguminosae) Fabaceae  
*Stipa tenacissima* L. (Gramineae) Poaceae  
*Trifolium pratense* L. (Leguminosae) Fabaceae

**Bee Plants** (Pollen or nectar sources for honey production)

*Coridothymus capitatus* (L.) Rechb. f. (Labiatae) Lamiaceae  
*Melissa officinalis* L. (Labiatae) Lamiaceae  
*Rosmarinus officinalis* L. (Labiatae) Lamiaceae

**Materials** (Woods, fibers, cork, cane, tannins, latex, resins, gums, waxes, oils, lipids etc. and their derived products)

*Cupressus sempervirens* L. (Cupressaceae)  
*Linum usitatissimum* L. (Linaceae)  
*Olea europaea* L. (Oleaceae)  
*Pistacia lentiscus* L. (Anacardiaceae)  
*Quercus suber* L. (Fagaceae)

**Fuels** (Wood, charcoal, petrol substitutes, etc.)

*Juniperus oxycedrus* L. (Cupressaceae)  
*Quercus ilex* L. (Fagaceae)  
*Quercus suber* L. (Fagaceae)

**Social Uses** (Plants used for social purposes, not definable as food or medicines, such as masticatories, smoking materials, narcotics, hallucinogens and psychoactive drugs, contraceptives and abortifacients and plants with ritual or religious significance)

*Datura stramonium* L. (Solanaceae)  
*Hyoscyamus albus* L. (Solanaceae)  
*Laurus nobilis* L. (Lauraceae)  
*Lawsonia inermis* L. (Lythraceae)  
*Olea europaea* L. (Oleaceae)  
*Peganum harmala* L. (Zygophyllaceae)  
*Ruta montana* L. (Rutaceae)

**Vertebrate Poisons** (Plants poisonous to vertebrates, both accidentally and usefully, e.g. for hunting and fishing)

*Citrullus colocynthis* (L.) Schrad. (Cucurbitaceae)  
*Hyoscyamus niger* L. (Solanaceae)  
*Taxus baccata* L. (Taxaceae)  
*Urginea maritima* L. (Liliaceae)

**Non-Vertebrate Poisons** (Both accidental and useful poisons e.g. molluscicides, herbicides, insecticides to non-vertebrate animals, plants, bacteria and fungi)

*Lavandula stoechas* L. (Labiatae) Lamiaceae  
*Lawsonia inermis* L. (Lythraceae)  
*Mentha pulegium* L. (Labiatae) Lamiaceae

**Medicines** (Both human and veterinary)

*Coridothymus capitatus* (L.) Rechb. f. (Labiatae) Lamiaceae  
*Crataegus monogyna* Jacq. (Rosaceae)  
*Datura stramonium* L. (Solanaceae)  
*Marrubium vulgare* L. (Labiatae) Lamiaceae  
*Mentha pulegium* L. (Labiatae) Lamiaceae  
*Rosmarinus officinalis* L. (Labiatae) Lamiaceae  
*Taxus baccata* L. (Taxaceae)  
*Teucrium polium* L. (Labiatae) Lamiaceae  
*Urginea maritima* L. (Liliaceae)

**Environmental Uses** (Ornamentals, hedges, shade plants, windbreaks, soil improvers, plants for revegetation and erosion control, waste water purifiers, indicators of metals, pollution, or underground water)

*Cupressus sempervirens* L. (Cupressaceae)  
*Myrtus communis* L. (Myrtaceae)  
*Nerium oleander* L. (Apocynaceae)

---

The Network is coordinated by the Mediterranean Agronomic Institute of Chania (MAICh) and includes members who are representatives of International Organizations (CIHEAM, IUCN, IUBS ICMAP, FAO, IPGRI-WANA, LEAD) and form the Steering Committee, and representatives of Institutions from countries of the Mediterranean basin, acting as the Focal Point Coordinators. The participating countries are: Algeria, Cyprus, Egypt, France, Greece, Italy, Morocco, Portugal, Spain, Syria, Tunisia and Turkey. It is envisaged that the Network will include eventually members from all the Mediterranean countries and from relevant National Institutions and other International Organizations.

## **MAJOR ACTIVITIES**

### **Regional Workshops**

The first workshop, organized at the Mediterranean Agronomic Institute of Chania, Crete, Greece, was entitled “Identification of Wild Food and Non-Food plants of the Mediterranean Region” on June 28th-29th 1996. development. The Proceedings of this Workshop have been published in the Cahiers Options Méditerranéennes. The second MEDUSA Workshop, was held in Port El Kantaoui, Tunisia on May 1<sup>st</sup>-3<sup>rd</sup>, 1997. General and Country Reports on the Governmental and Non-Governmental Organizations involved in any aspects of the study, cultivation, sustainable use, conservation of plant genetic resources used or of potential use in agriculture, and habitat conservation and restoration, were presented. The Proceedings were published in December 1998.

The third MEDUSA Workshop was held at the University of Coimbra, 27–28 April 1998. In addition to general papers and progress reports on activities of the Network, a series of case studies on particular medicinal and/or aromatic species was presented. The Proceedings will be published in 1999.

### **Newsletter**

To facilitate operation of the Network, a newsletter is published, with the financial support of FAO. The first, was issued in the summer of 1997 and the second will appear in early 1999.

### **Priority Species List And Database**

A specific questionnaire aimed at establishing a list of the priority species in the region, following the use categories as defined in the objectives, was been distributed and completed by most of the current Country Focal Point Coordinators of the Network. The results of the questionnaires have been entered in a database held at MAICh with a view to compiling a database of the mostly widely used species. This is currently being revised and expanded. So far, 1335 records have been received and correspond to 684 taxa and 361 genera that belong to 104 families. Half of the records as well as half of the taxa and 40% of the genera refer only to seven plant families which are in order of importance: Labiatae, Leguminosae (Fabaceae), Compositae (Asteraceae), Gramineae (Poaceae), Umbelliferae (Apiaceae), Rosaceae and Solanaceae. Work is also in progress, in collaboration with SEPASAL, ILDIS, Euro+Med PlantBase and FAO, on revising the use categories and on defining fields for use in an enhanced database.