

PHYSIOLOGY, REPRODUCTION AND USES OF CACTUS SPECIES

Prof. Noemi Tel-Zur (1-2-2049 2credits)

Course description:

The Cactaceae family comprises about 1,600 plant species. Cacti are cultivated worldwide as forage, fodder, medicinal, industrial, fruit and vegetable crops. They inhabit a wide range of ecosystems and are exceptionally drought-tolerant having a high economic potential in arid regions. This course will provide a broad knowledge of physiology, morphology, reproduction and uses of cactus species.

The topics that will be covered are:

1. Physiology of Crassulacean acid metabolism
2. Ecophysiology, biodiversity and conservation
3. Taxonomy and distribution of CAM plants
4. Morphology of Cactaceae. Evolution of cladodes and spines as an adaptation to arid environments
5. Reproductive biology: flower types, pollinators and pollination. Self-incompatibility and self-compatibility. Breeding programs
6. Mechanism controlling fruit quality
7. Cactus cytology. Apomixis and polyploidy
8. Biology of Cochineal (*Dactylopius coccus*), origin and diversity, importance and uses of carminic acid
9. Cactus as crops: *Opuntia ficus-indica*, vine-cacti, columnar cactus, *Nopalea* spp.

Recommended reading:

1. Physicochemical and Environmental plant physiology. 4th edition. Park S. Nobel (author). 2010.
2. Cacti: biology and uses. Park S. Nobel (editor). 2002.
3. Environmental Biology of Agaves and Cacti. Park S. Nobel (editor). 2003.
4. The cactus family. Edward F. Anderson (author). 2001.