

Ex situ Conservation of European Threatened Plants in Western Crete, Greece (CRETAPLANT project, EU-LIFE)

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Introduction

Through the LIFE–Nature Programme, the European Union finances activities for the protection and conservation of plants and habitats of Community importance ('Habitat Directive' 92/43 EEC). The main objective of the LIFE-Nature project 'CRETAPLANT - A Pilot network of Plant Microreserves in Western Crete' is the *in situ* conservation of 6 threatened plants namely: 1. * *Androcymbium rechingeri* Greuter, 2. * *Anthemis glaberrima* (Rech. f.) Greuter, 3. * *Bupleurum kakiskalae* Greuter, 4. * *Cephalanthera cucullata* Boiss. & Heldr., 5. * *Hypericum aciferum* (Greuter) N.K.B. Robson, 6. * *Nepeta sphaciotica* P. H. Davis. and 1 priority habitat type 9370, * Palm groves of *Phoenix* through the establishment of a network of microreserves (conservation areas of small extent, less than 20 ha each). The goal of the present work (Action D2 of CRETAPLANT – *Ex-situ* conservation) is to complement *in situ* conservation by (a) collecting and storing a significant number of seedlots of priority plants in the Seed Bank of MAICH, (b) preparing protocols of seed handling, storage and germination and (c) elaborating techniques for growing seedlings and outplanting in the field (both in botanical gardens and plant microreserves).

Methods

Seeds of most plant species were collected during the years 2005-2006. Seeds were collected from the natural populations of the above native taxa. Special care was given to the collection of the rare and threatened species in order to preserve the survival of their natural populations. Most of the germination experiments were done after one year of storage in the drying room (temperature 15-20 °C - 15 % R.H.). The seed storage behaviour was studied after the storage of the seeds in the cold room (-20 °C) for more than 3 months (Hong and Ellis, 1996). The embryo morphology was based on the revised Martin's classification system (Baskin & Baskin, 2007). For germination experiments seeds were sown on agar gel and incubated in growth chambers with temperature and light control, at various constant temperature (5, 10, 15 & 20 °C) and under a daily photoperiod (12/12 h, light/dark). For germination experiments in darkness, seeds were incubated within light-proof, metal containers in the same cabinets, and the seeds were counted in a dark room with green safelight.

Results and Discussion

All the taxa collected display an orthodox storage behaviour. *Bupleurum kakiskalae*, *Androcymbium rechingeri* and *Phoenix theophrasti* possess linear embryos and, by studying embryo growth before germination, the occurrence of morphological dormancy in the former species has already been revealed (Fournaraki & Thanos, 2004). *Phoenix theophrasti* requires relatively high temperatures for germination (20-30 °C) in contrast to *Bupleurum kakiskalae*, which germinates only at low ones (5-10 °C). *Hypericum aciferum* seeds are non-dormant and germinate under cool, Mediterranean winter, temperatures irrespective of light conditions. Germination of *Nepeta sphaciotica* (an alpine plant at a habitat covered by snow for 6-7 months) is manifested only in the light and within a narrow temperature range (15-25 °C). *Anthemis glaberrima* seems to have a kind of mechanical dormancy and germinates under laboratory conditions after the removal of the testa. The seedlings of the above mentioned species were successfully planted in the Botanical Garden of MAICH and in two Alpine Gardens of the Forest Directorate of Chania.

References

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