The propagation, cultivation and conservation of European terrestrial orchids
La propagation, cultivation et conservation des orchidées terrestres d'Europe

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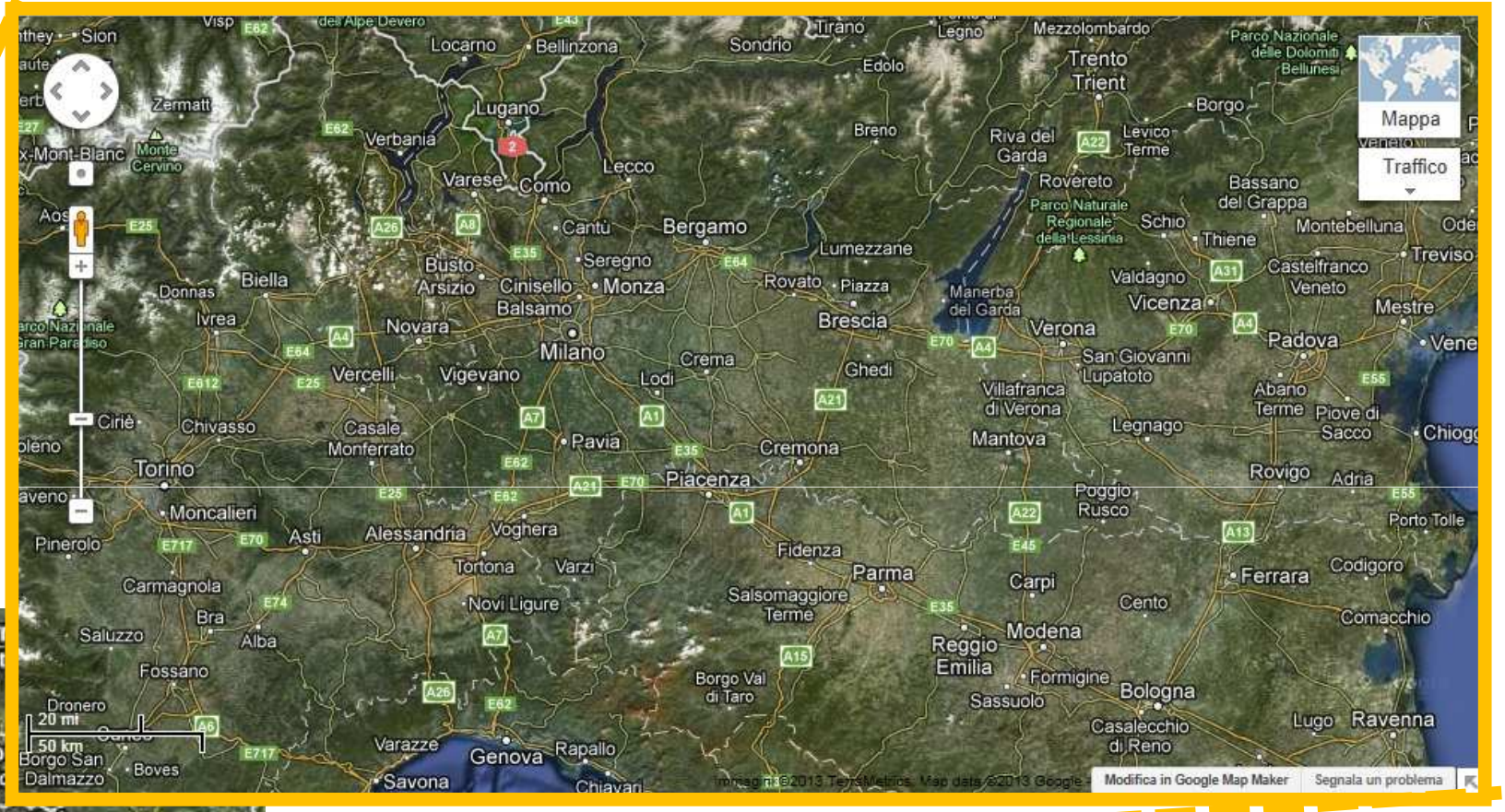
Centro Flora Autoctona della Regione Lombardia


Schweiz
Suisse
Svizzera
(Switzerland)
Österreich
(Austria)
Vaduz
Torino
Milano
Monaco
Hrvatska
(Croatia)
Bosna i Hercegovina
(Bosnia and Herzegovina)
Italia
(Italy)
Roma
Crna Gora
(Montenegro)
Napoli
Shqipëria
(Albania)
Palermo
Catania
تونس
Tunis


Sion
Zermatt
Monte Cervino
Aosta
Ivrea
Biella
Donnas
Ciriè
Chivasso
Torino
Moncalieri
Pinerolo
Asti
Carmagnola
Bra
Alba
Saluzzo
Fossano
Dronero
Borgo San Dalmazzo
Boves
Casale Monferrato
Vercelli
Novara
Varallo
Verbania
Lugano
Locarno
Bellinzona
Varese
Como
Lecco
Busto Arsizio
Cinisello Balsamo
Monza
Cantù
Bergamo
Seregno
Milano
Vigevano
Lodi
Crema
Pavia
Alessandria
Voghera
Tortona
Novi Ligure
Varzi
Varazze
Genova
Savona
Rapallo
Chiavari
Sondrio
Tirano
Edolo
Breno
Lumezzane
Rovato
Piazza
Brescia
Ghedi
Cremona
Piacenza
Fidenza
Salsomaggiore Terme
Parma
Borgo Val di Taro
Reggio Emilia
Modena
Sassuolo
Formigine
Carpi
Mirandola
Mantova
Villafranca di Verona
Verona
Manerba del Garda
Riva del Garda
Rovereto
Trento
Trient
Mezzolombardo
Borgo
Levico Terme
Bassano del Grappa
Schio
Thiene
Valdagno
Vicenza
San Giovanni Lupatoto
Legnago
Poggio Rusco
Montebelluna
Castelfranco Veneto
Treviso
Mestre
Padova
Abano Terme
Piove di Sacco
Rovigo
Adria
Porto Tolle
Codigoro
Ferrara
Comacchio
Cento
Bologna
Casalecchio di Reno
Lugo
Ravenna
Parco Nazionale delle Dolomiti Bellunesi
Parco Naturale Regionale della Lessinia
Mappa
Traffico
20 mi
50 km
Modifica in Google Map Maker
Segnala un problema

Project ORCHIS

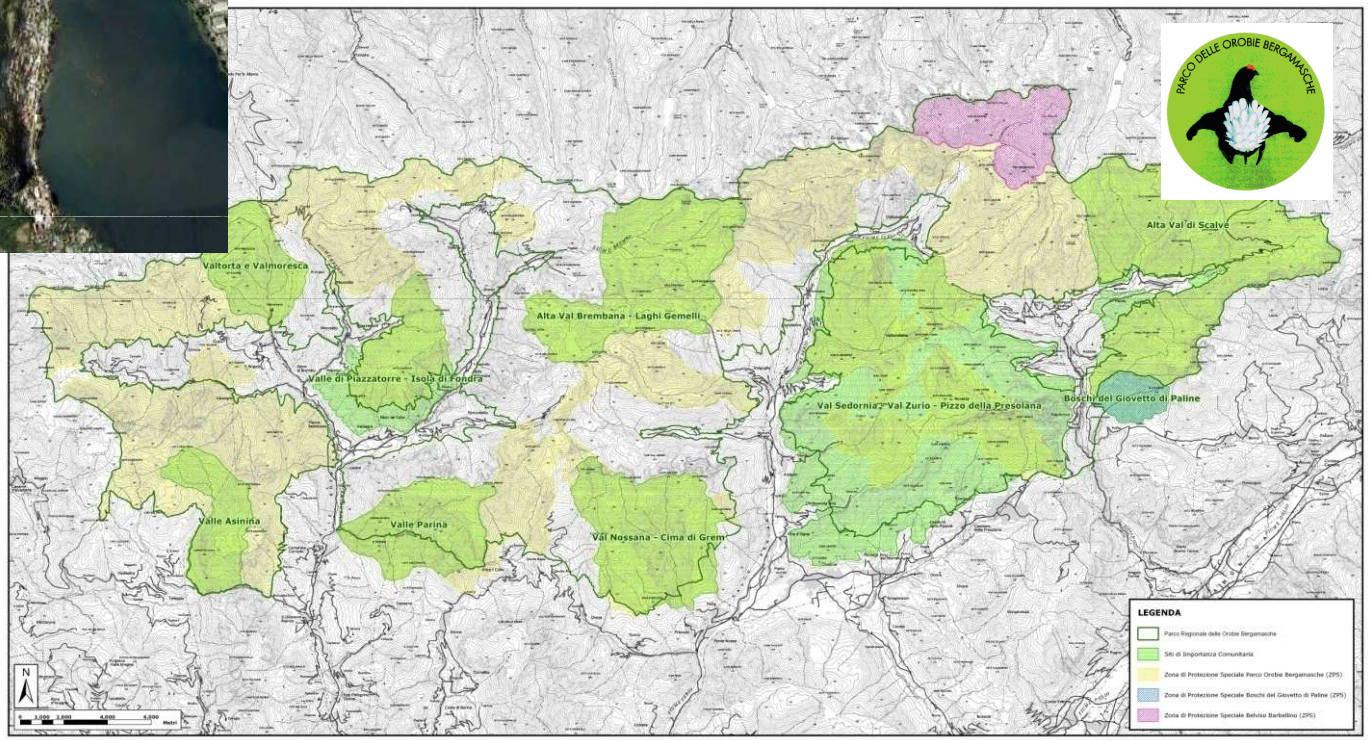
Orchid Restocking and Conservation for Higher altitude Indigenous Species

April 2009 – September 2011

Parco del Monte Barro

fondazione cariplo

Parco delle Orobie Bergamasche



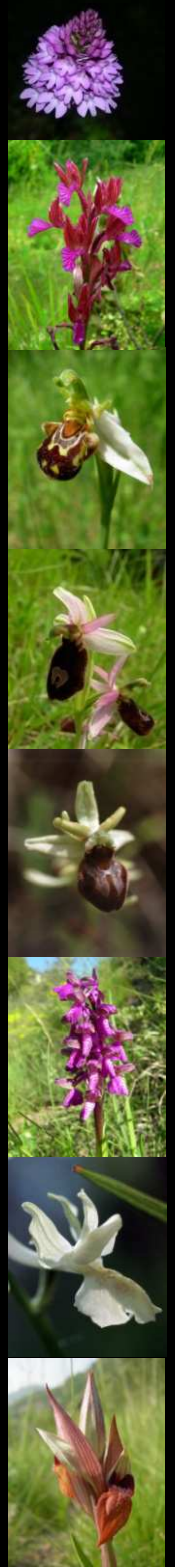
List of the 20 target species of project ORCHIS (in red, the rarest species). Rarity index from Ferlinghetti (2001).

Species	Rarity index
Chamorchis alpina	99.0
Cephalanthera rubra	89.5
Cypripedium calceolus	94.3
Dactylorhiza traunsteineri	97.1
Goodyera repens	94.3
Herminium monorchis	96.2
Nigritella rubra	93.3
Ophrys apifera	87.6
Ophrys benacensis	90.5
Orchis papilionacea	99.0
Anacamptis pyramidalis	65.7
Coeloglossum viride	58.1
Gymnadenia conopsea	32.4
Gymnadenia odoratissima	52.4
Nigritella rhellicani	62.9
Ophrys sphegodes	82.9
Orchis morio	79.0
Orchis provincialis	79.0
Pseudorchis alpina	63.8
Traunsteinera globosa	51.4

Pasture grasslands, high altitude

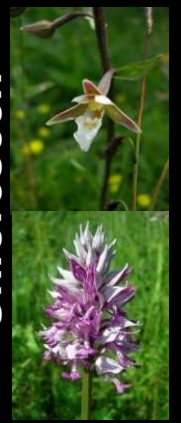
Wetland

Woodland, high altitude



Meadows, low/intermediate altitude

Seeds of 23 species were collected from 18 sites (6 SCI, 4 ASP)



Unforeseen

A total of 14 species were reproduced from seed and used to reinforce wild populations

10,145 plants were returned to the wild

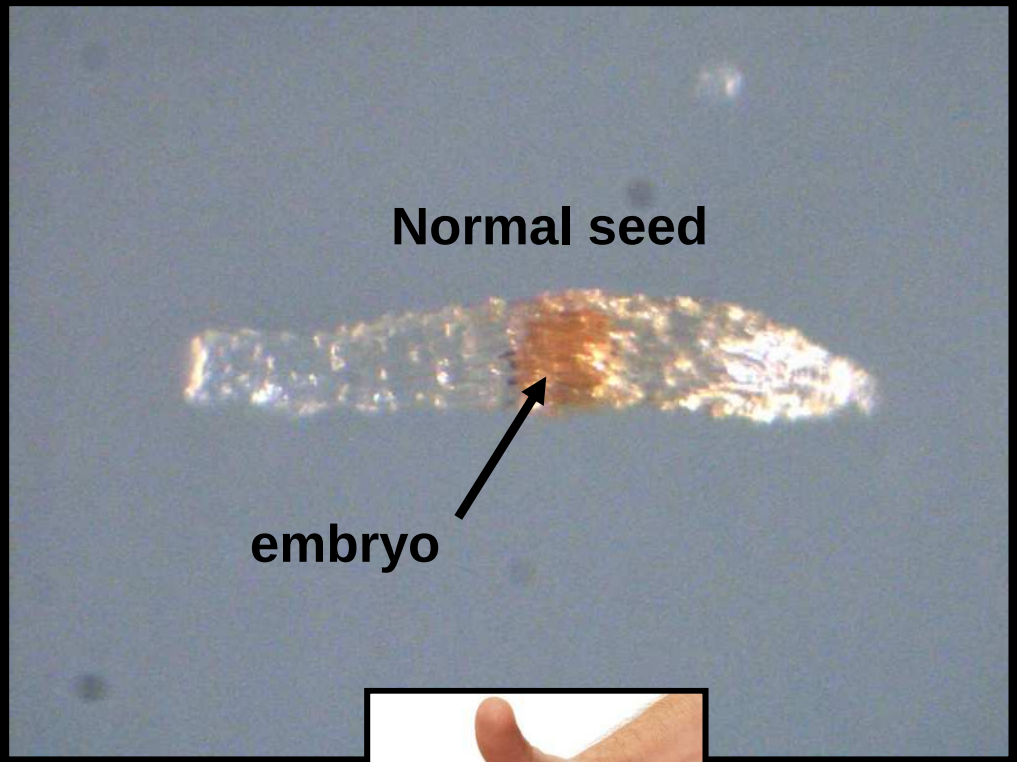
Anacamptis morio, A. pyramidalis, Coeloglossum viride, Dactylorhiza traunsteineri, Goodyera repens, Gymnadenia conopsea, G. odoratissima, Nigritella nigra ssp. *rhellicani, Orchis provincialis, Ophrys apifera, O. benacensis, O. sphegodes, Pseudorchis albida, Serapias vomeracea*

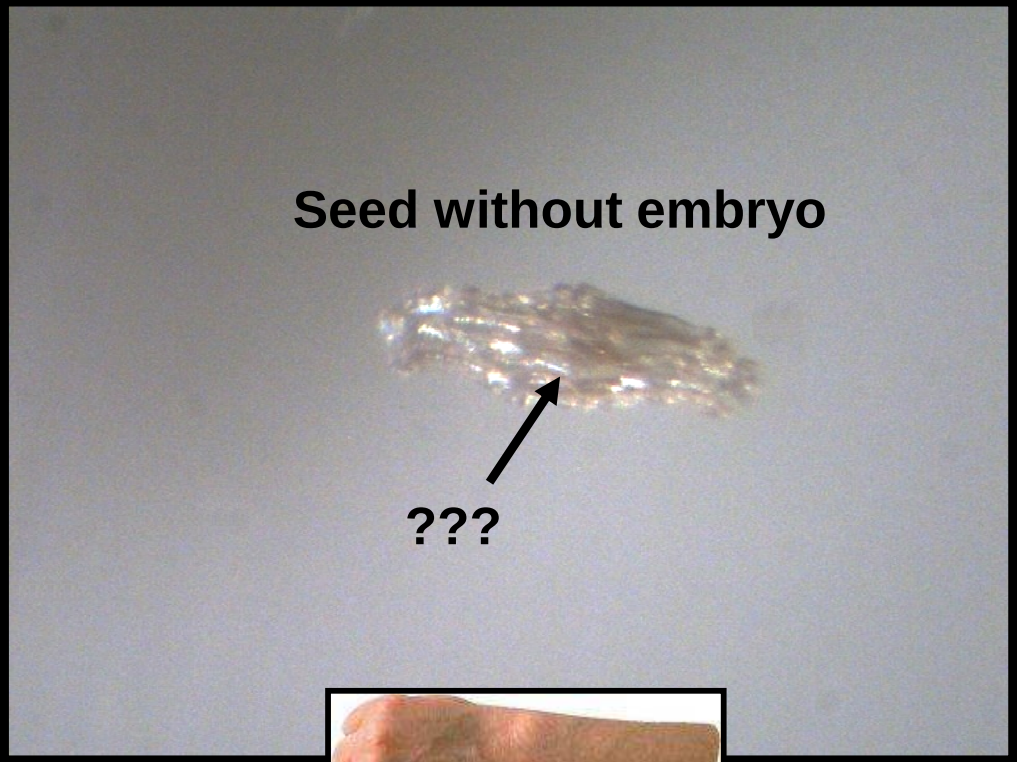
Cephalanthera rubra

Nigritella rubra

Cypripedium calceolus


Ophrys apifera
Ophrys benacensis
Ophrys sphegodes


Normal seed
embryo


Seed without embryo
???

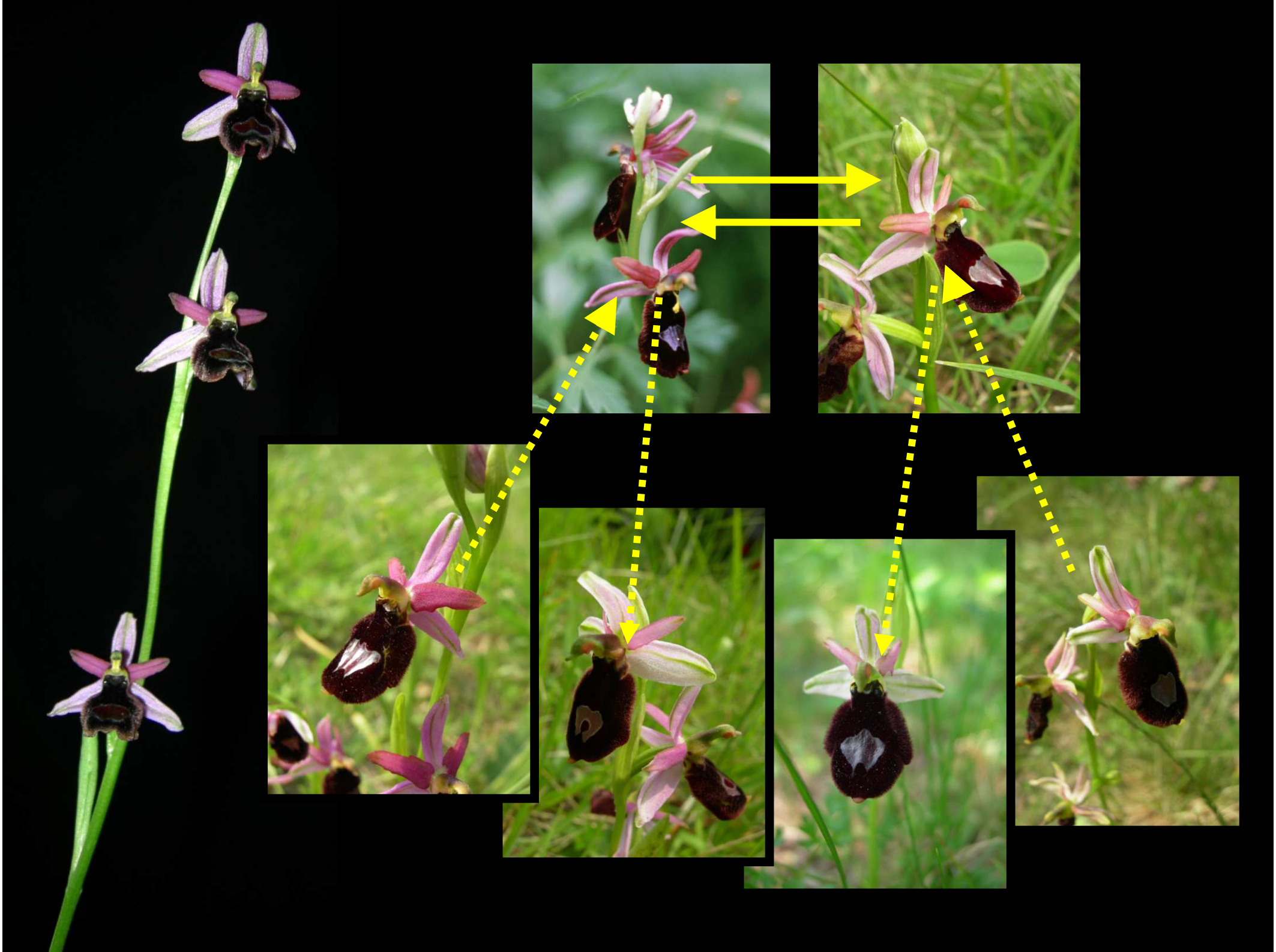
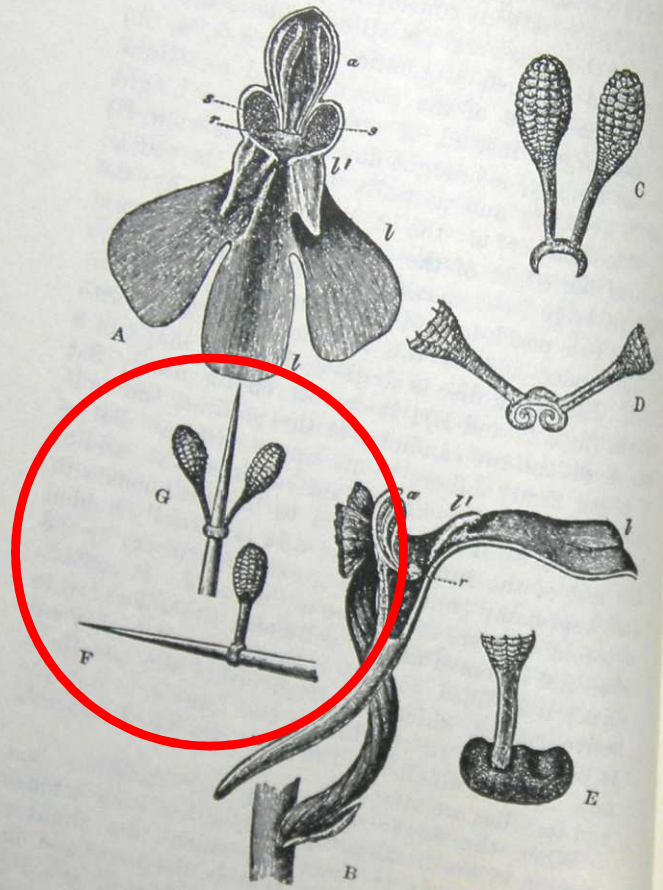


Fig. 3.



ORCHIS PYRAMIDALIS.

DESCRIPTION OF FIG. 3.

a. anther.	*l*. labellum.
s, *s*. stigma.	*l'*. guiding plate on the labellum.
r. rostellum.	*n*. nectary.

A. Front view, with all the sepals and petals removed, except the labellum.

B. Side view, with all the sepals and petals removed, with the labellum longitudinally bisected, and with the near side of the upper part of the nectary cut away.

C. The two pollinia attached to the saddle-shaped viscid disc.

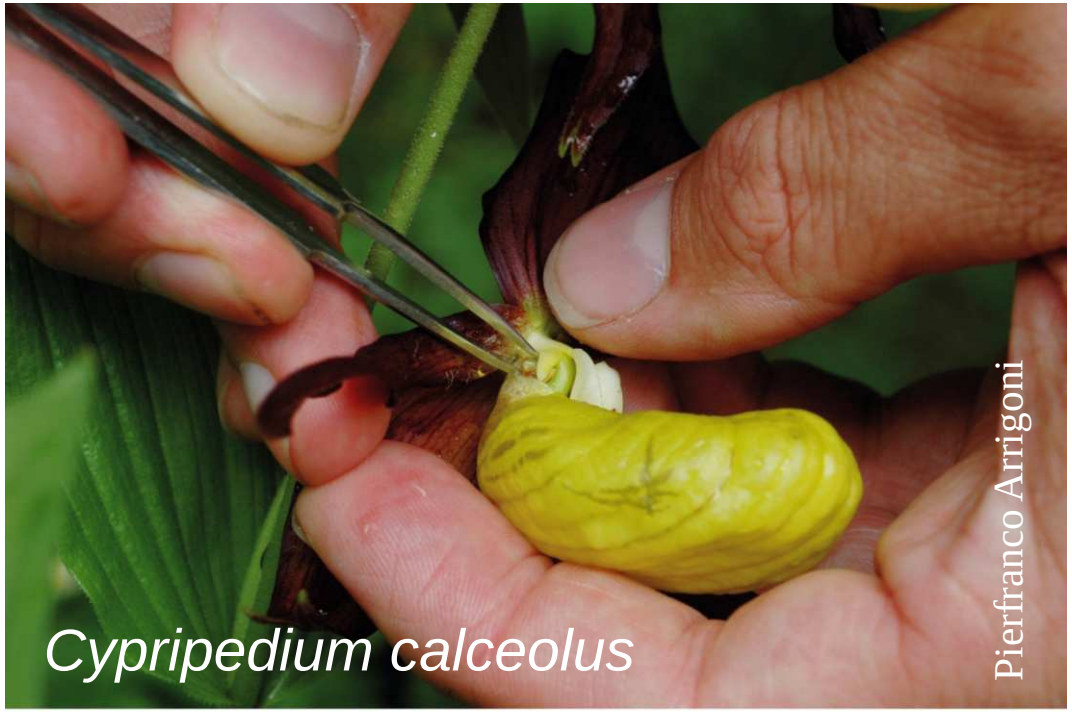
D. The disc after the first act of contraction, with no object seized.

E. The disc seen from above, and flattened by force, with one pollinium removed; showing a depression in its surface, by which the second movement of the pollinium is effected.

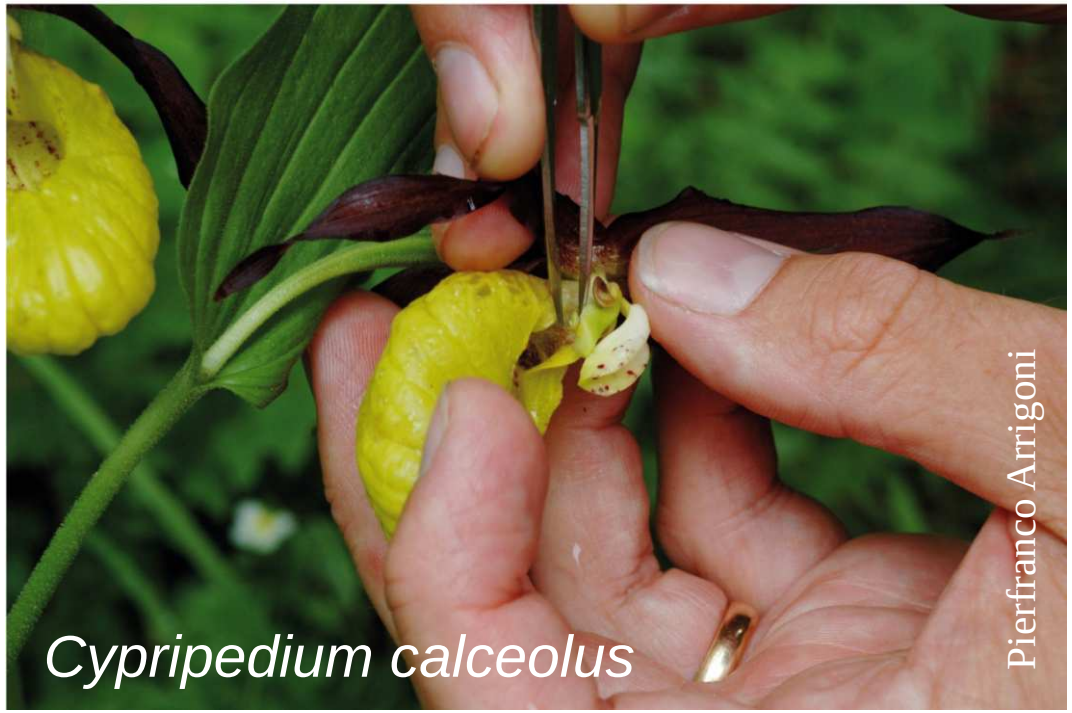
F. The pollinia removed by the insertion of a needle into the nectary, after the saddle has clasped the needle by the first act of contraction.

G. The same pollinia after the second movement and their consequent depression.


Cephalanthera rubra


Cypripedium calceolus
Pierfranco Arrigoni


Ophrys benacensis


Cypripedium calceolus
Pierfranco Arrigoni











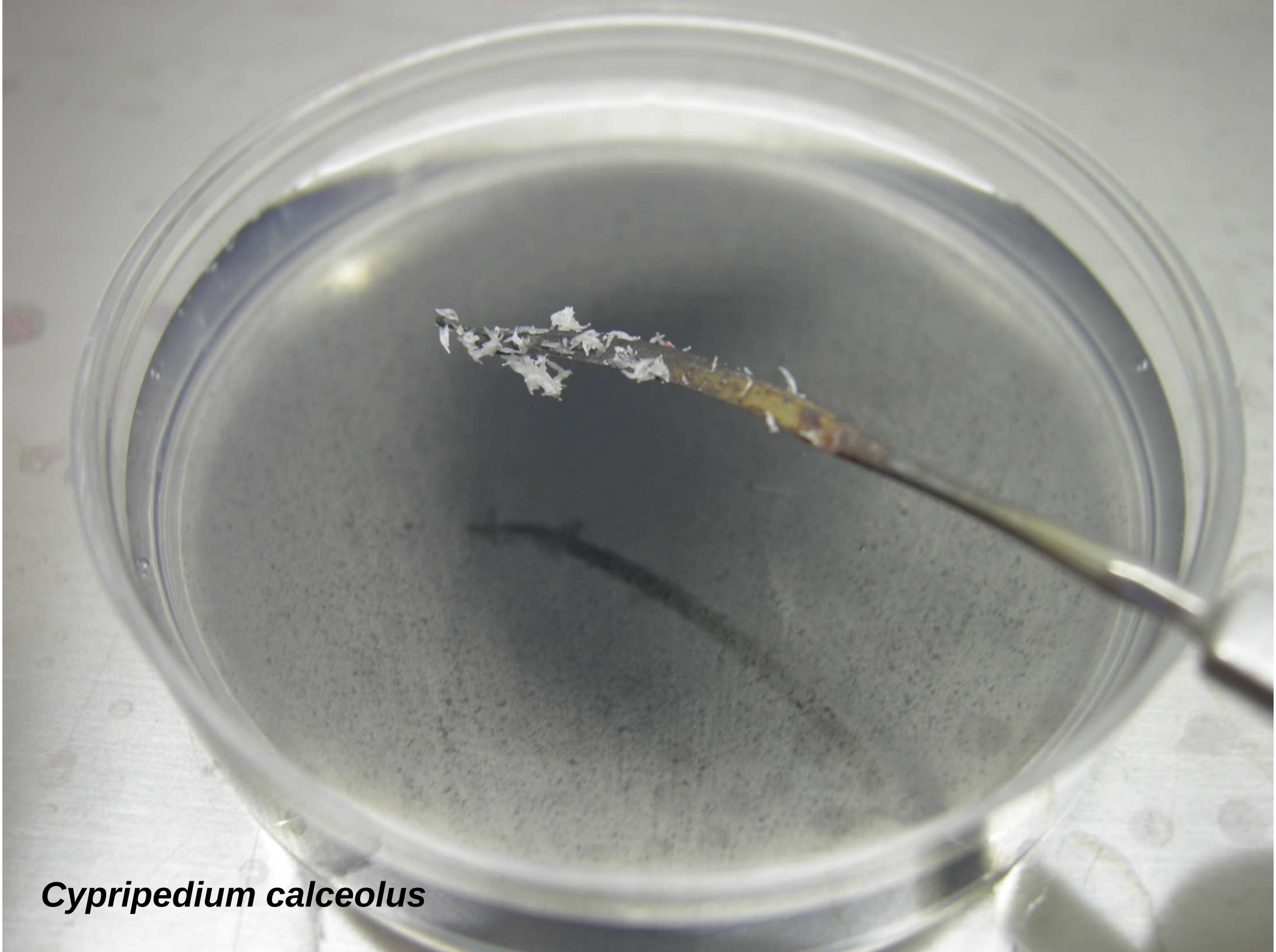


Ophrys sphegodes

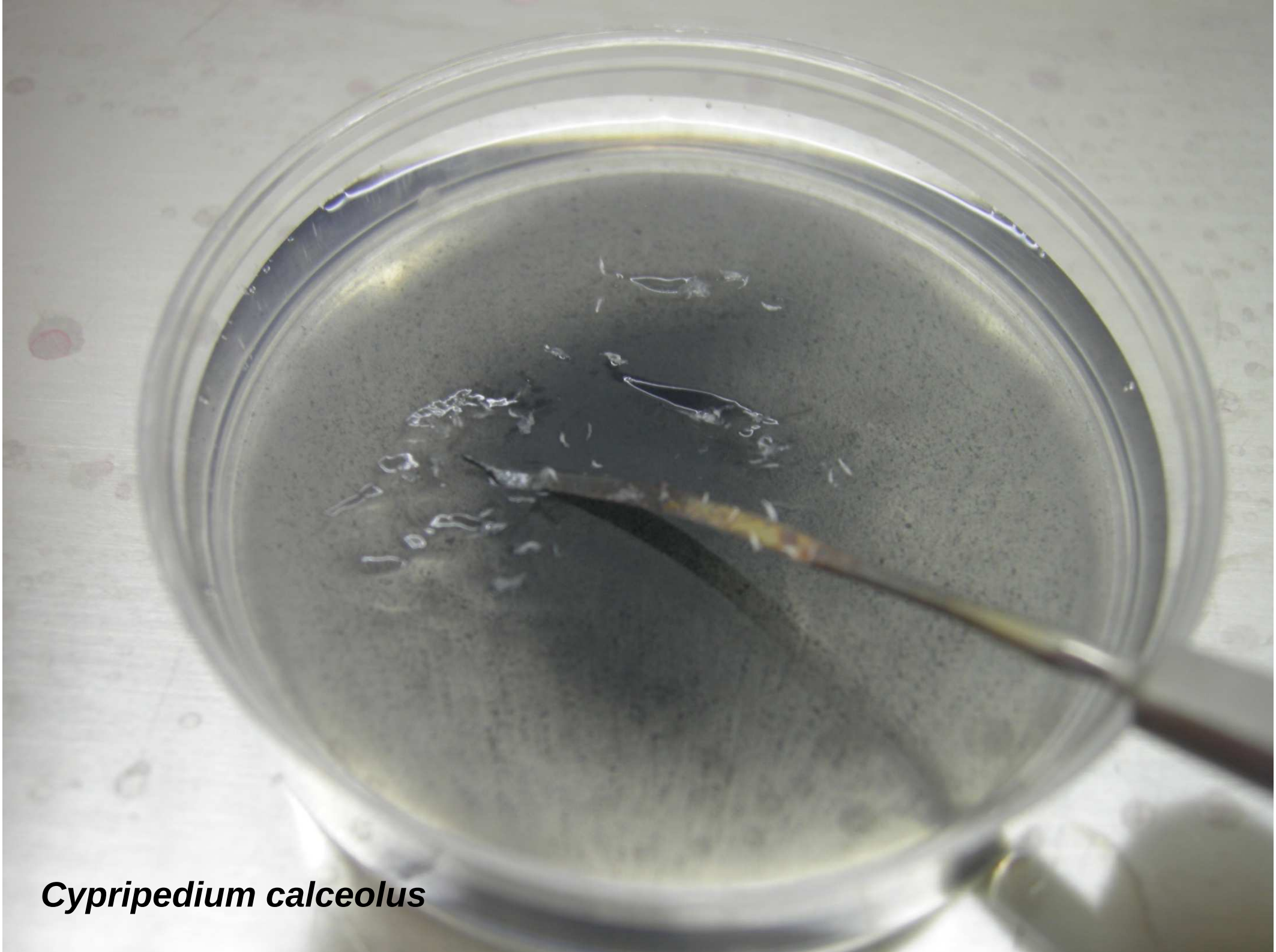
Seed sowing

Cypripedium calceolus

Cypripedium calceolus

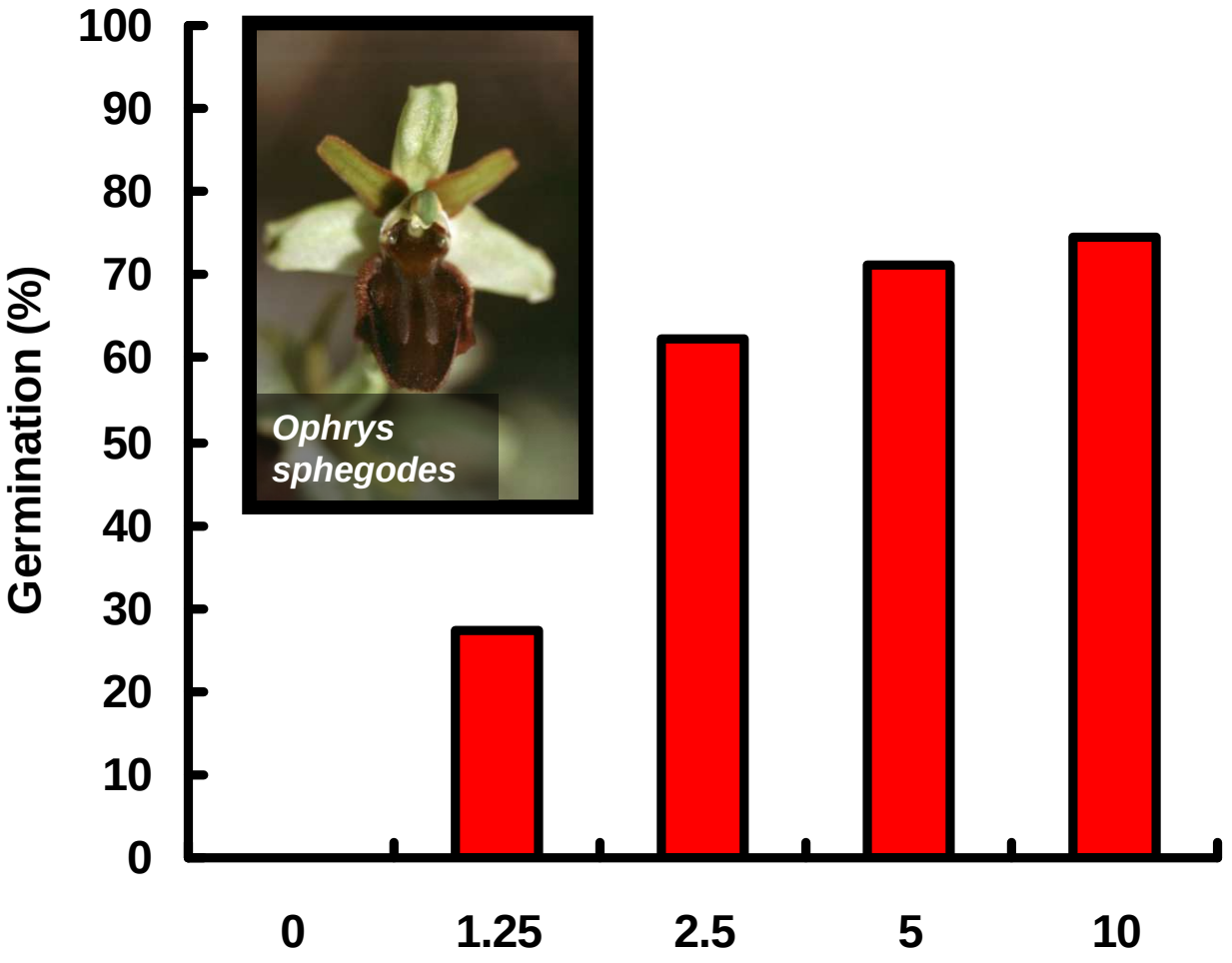


Cypripedium calceolus



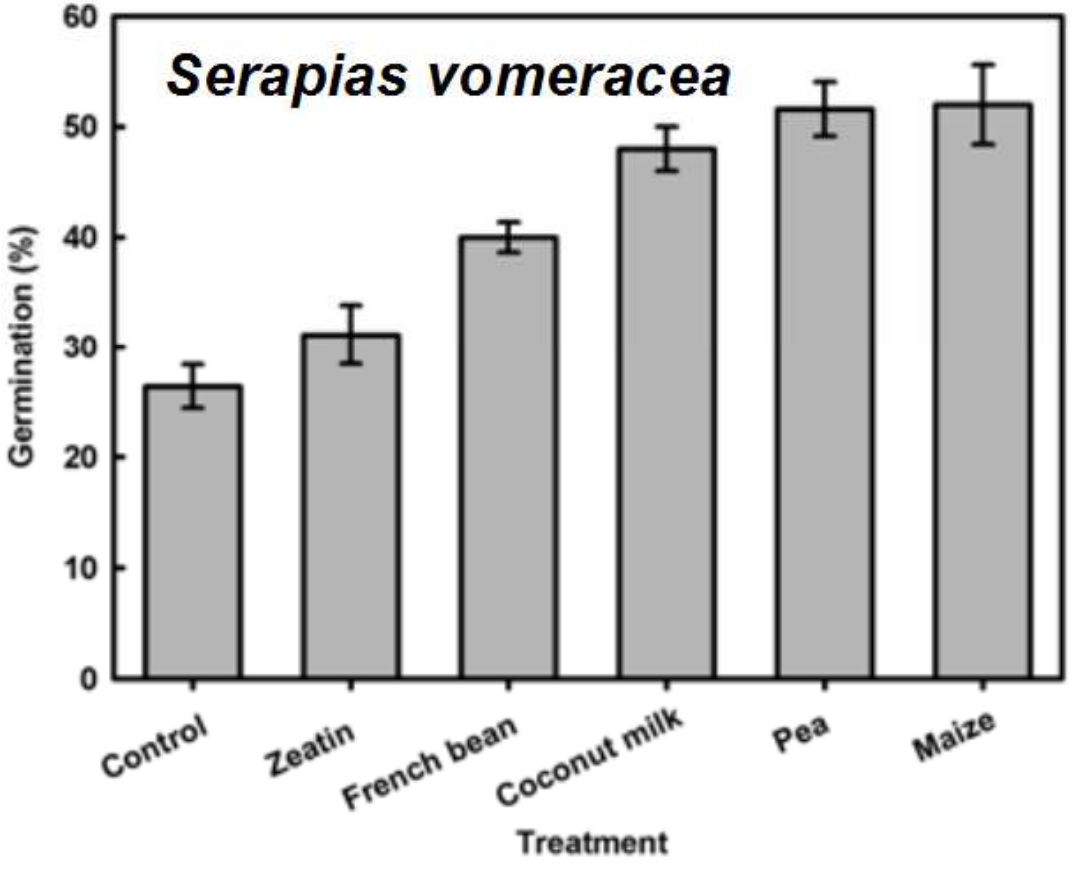
Cypripedium calceolus

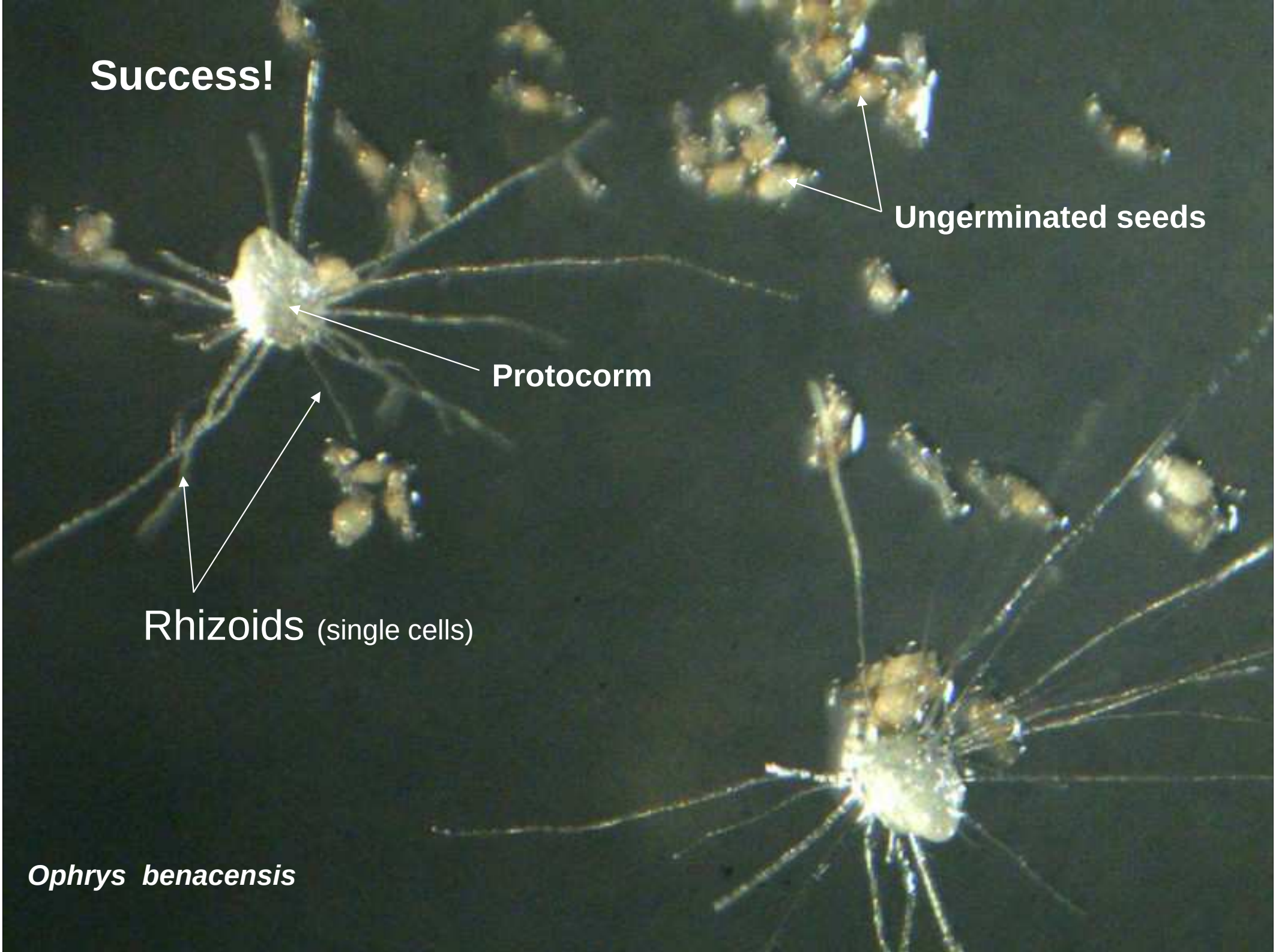

SAVE
BRAND
COCONUT MILK
LATTE DI COCCO
Natural Choice

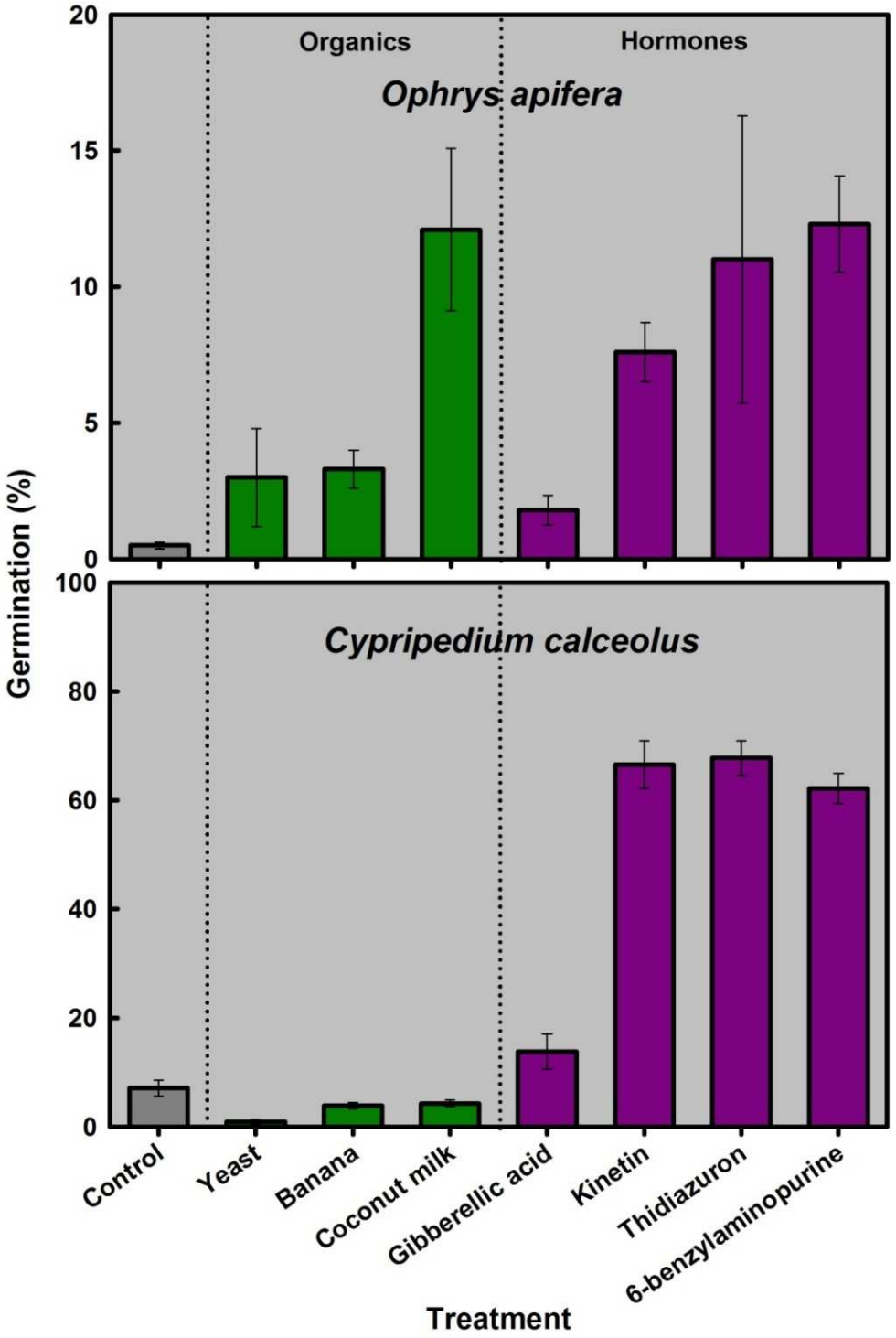

Germination (%)
100
90
80
70
60
50
40
30
20
10
0
Ophrys sphegodes
0
1.25
2.5
5
10
Concentration of coconut milk in Coconut Enriched Medium (CEM) (%)


TEFAL


Succo di ananas
Pineapple juice
Polpa di banana
Banana pulp
Latte di cocco
Coconut milk
Bananasco®™
(patent pending)

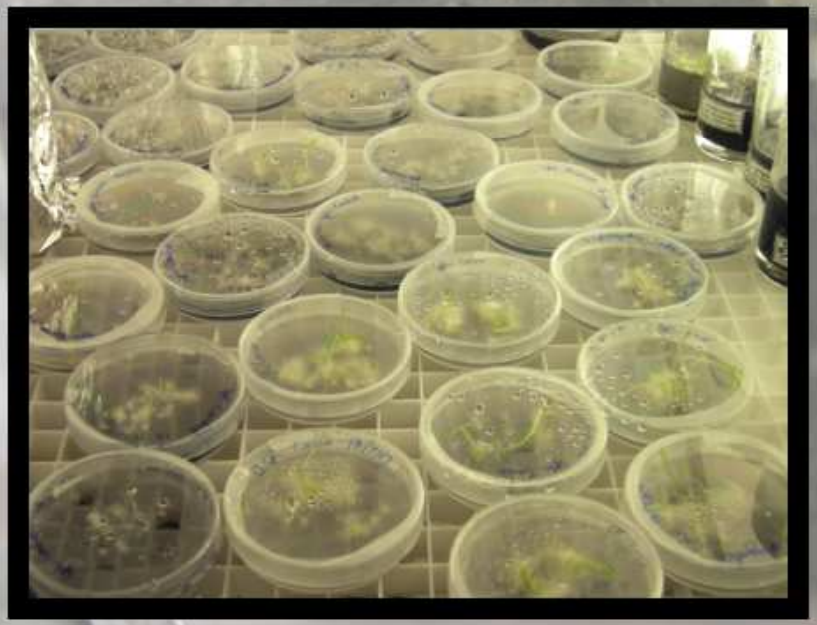

Serapias vomeracea
Germination (%)
60
50
40
30
20
10
0
Control
Zeatin
French bean
Coconut milk
Pea
Maize
Treatment


Success!
Ungerminated seeds
Protocorm
Rhizoids (single cells)
Ophrys benacensis


Organics
Hormones
Ophrys apifera
Cypripedium calceolus
Germination (%)
0
5
10
15
20
0
20
40
60
80
100
Control
Yeast
Banana
Coconut milk
Gibberellic acid
Kinetin
Thidiazuron
6-benzylaminopurine
Treatment

Ophrys apifera

Ophrys benacensis



The plantlets are ready to be transferred to larger containers when one small green leaf is visible

De Wit tube

Serapias vomeracea

Dactylorhiza traunsteineri

Coeloglossum viride

Ophrys apifera

Pseudorchis albida

Gymnadenia conopsea

Serapias vomeracea


Orchis morio


Serapias vomeracea (Burm. F.) Briq. (Orchidaceae)
Progetto ORCHIS
fondazione cariplo
fondazione cariplo


Serapias vomeracea


rchis morio
wn: 23/07/07 5%CEM
plate: 30/10/07 Malm

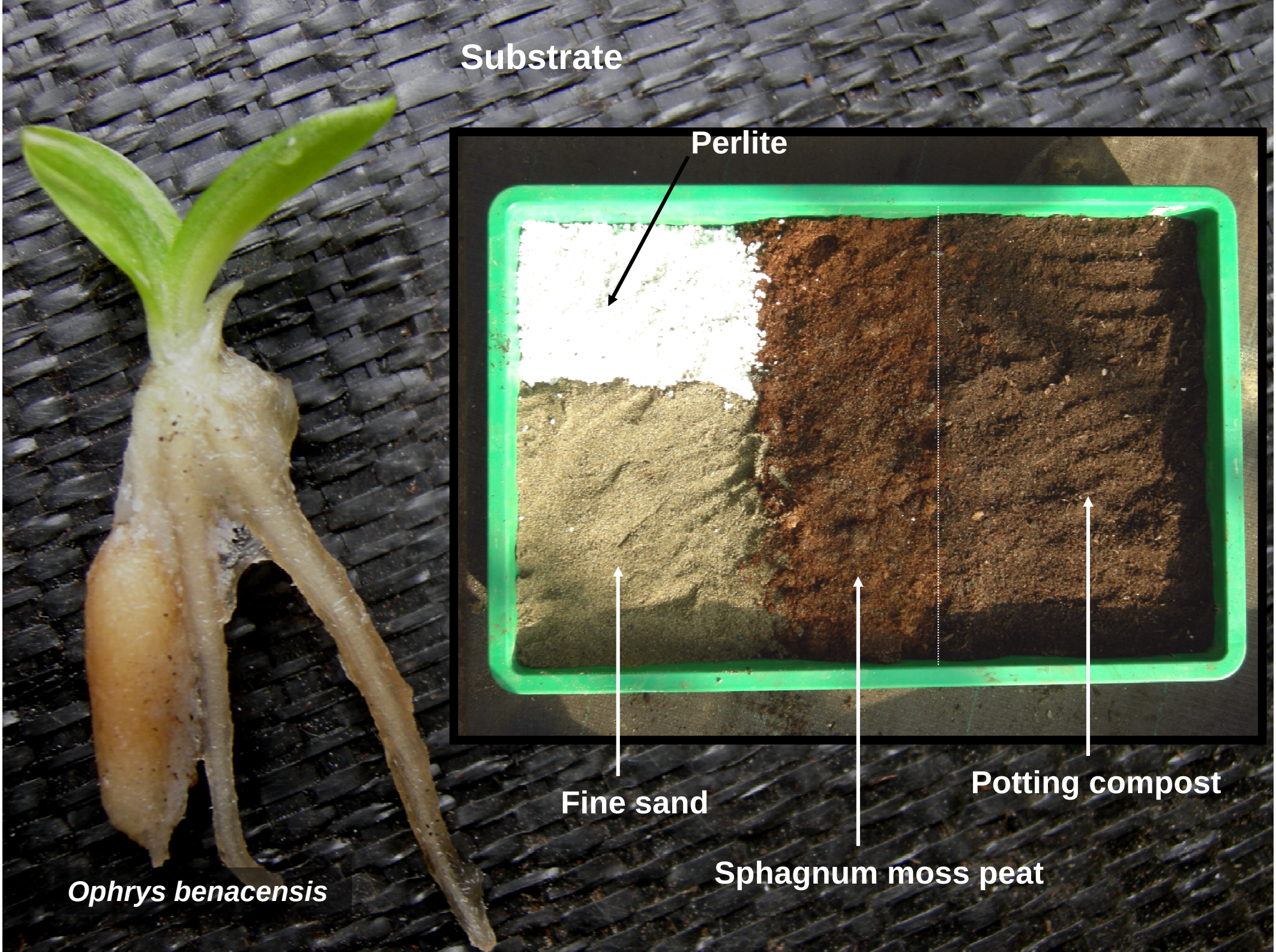

Orchis mor
own: 23/07/0
eplate: 30/10/


rys benacensis
18/07/07 5%CEM
14/3/08 20%CEM


Ophrys sphegodes
sphegodes
07/07 5%PEM
11/07 5%CEM
100 mg L-1 NH4NO3

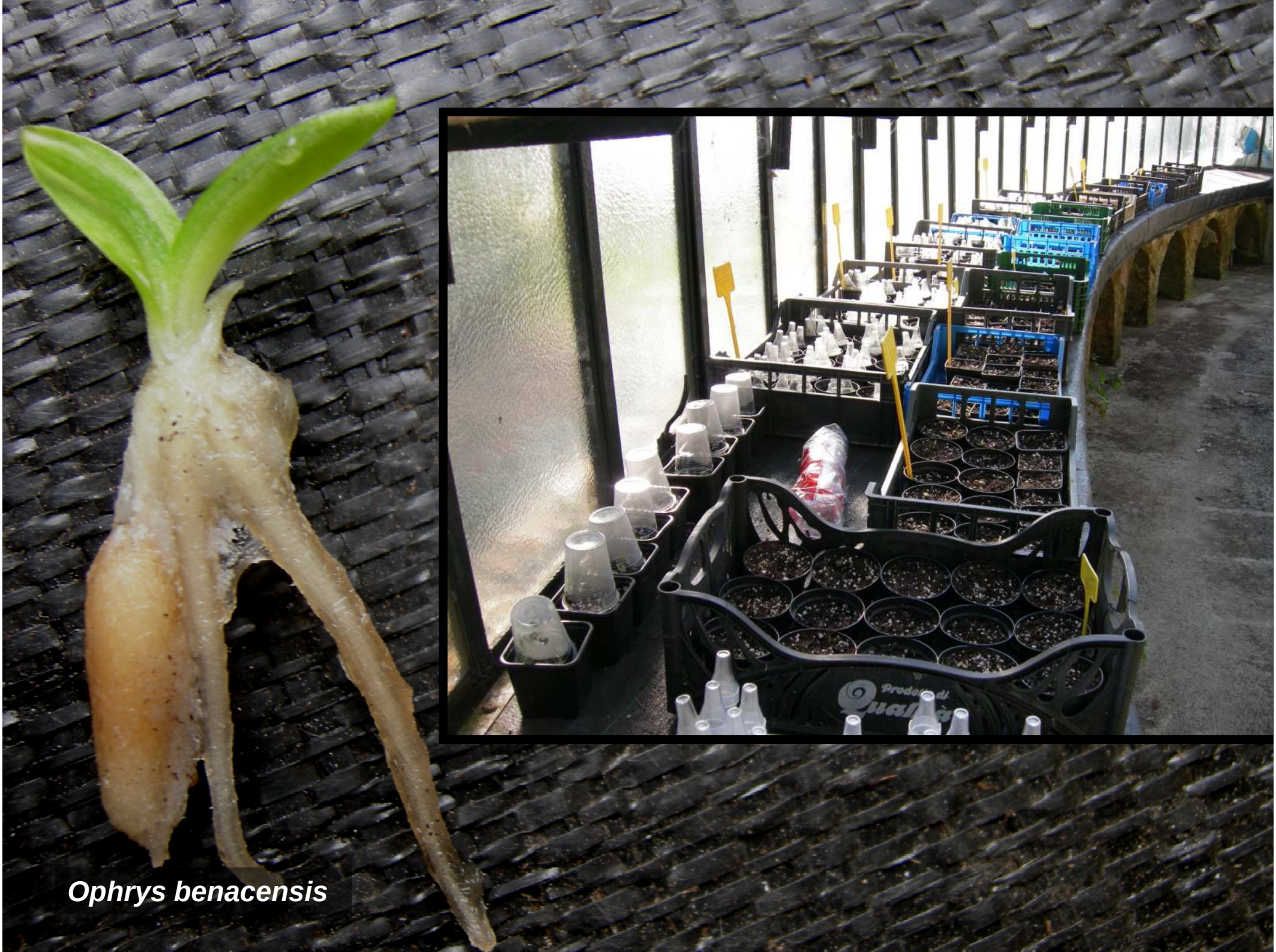

phrys sphegodes
m: 18/07/07 5%CEM
l: 16/01/08 5%CEM
Nitrogen: 100 mg L-1 NH4NO3


Ophrys benacensis


Substrate
Perlite
Fine sand
Sphagnum moss peat
Potting compost
Ophrys benacensis

Mix it up!

Ophrys benacensis



Ophrys benacensis

Ophrys benacensis

Keep the humidity high in the first week by covering the plants with the tops of De Wit tubes, but do not leave these in the sun

Ophrys benacensis

Anacamptis morio

Keep the humidity high in the first week by covering the plants with the tops of De Wit tubes, but do not leave these in the sun

Ophrys benacensis

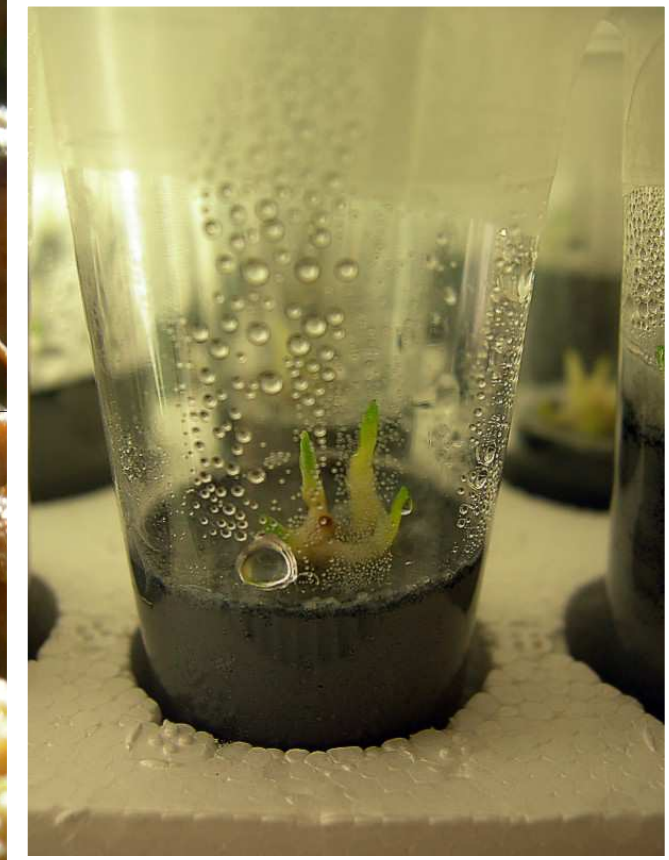
Keep the humidity high in the first week by covering the plants with the tops of De Wit tubes, but do not leave these in the sun


Orchis
provincialis
PRG
ORCHIS


Orchis
morio
PRG
ORCHIS


Serapias
vomeracea

Serapias vomeracea



First year in pots

A covering of small stones may be used to prevent moss from growing

Coeloglossum viride

Most species need good drainage and dry soil, but wetland species do NOT

For these species, do not add sand to the growth medium, stand in water but be careful as rotting can occur

Dactylorhiza traunsteineri

Goodyera repens

Woodland species can be grown on coconut fibre, leaf litter and moss

Ophrys sphegodes

Ophrys apifera


Ophrys sphegodes
Semina 18/7/07
tra. 16/1/08
Vasi 22/8/08
2009


Ophrys sphegodes
Semina 18/7/07
tra. 16/1/08
Vasi 22/8/08
2010

Ophrys sphegodes


Ophrys
benacensis
PRG
ORCHIS

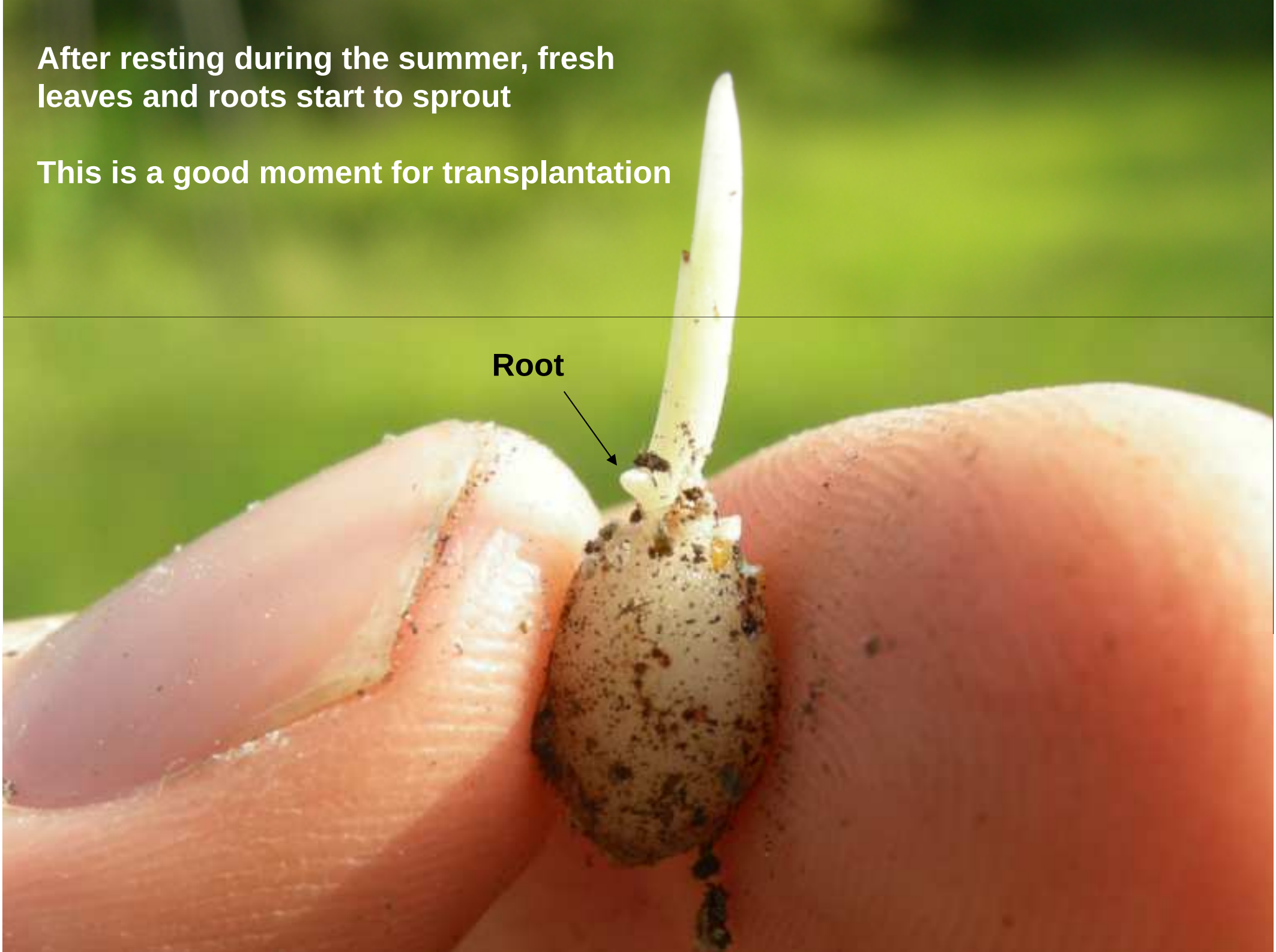
Transplanting green plants in the growth phase will kill them

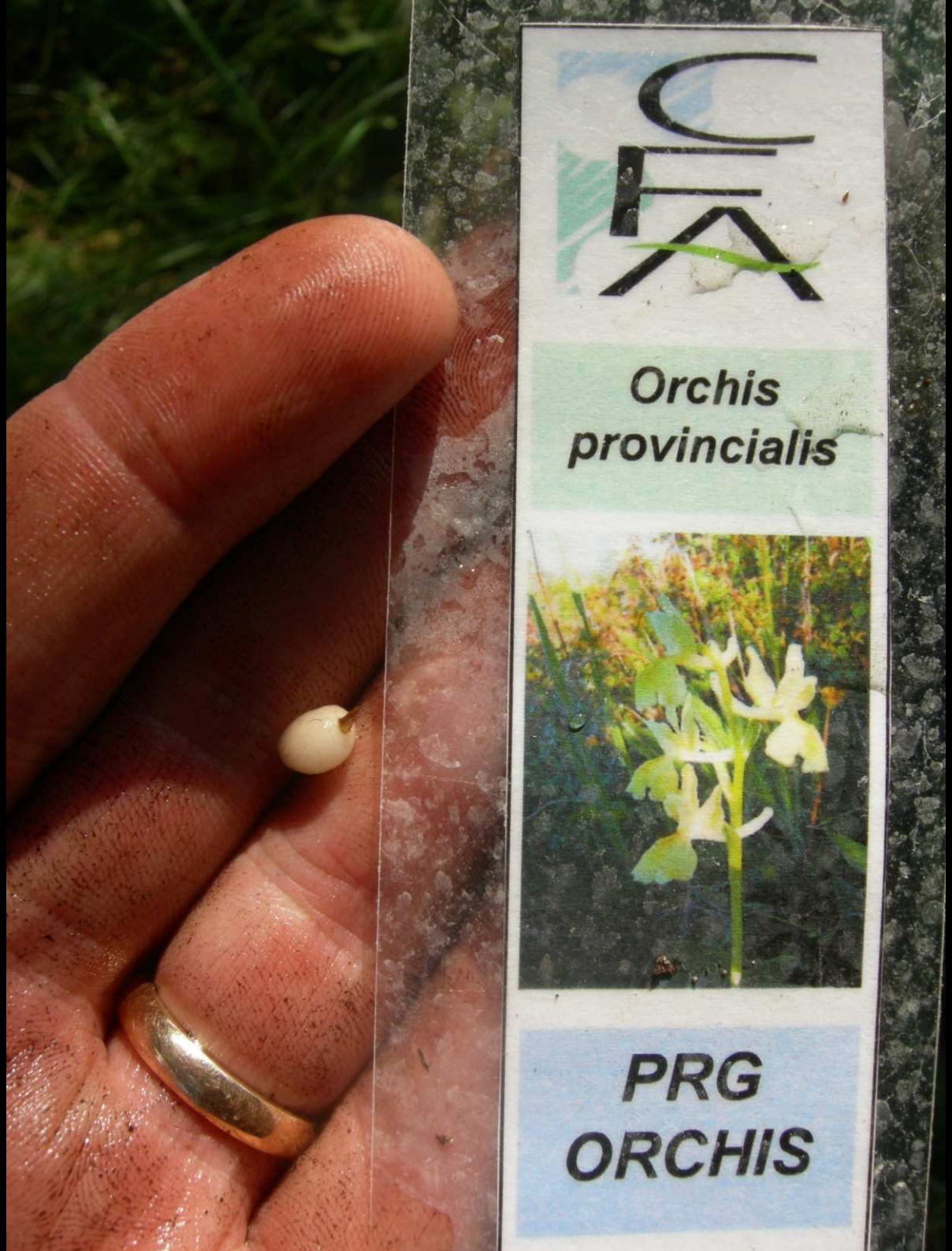

Wait for the leaves to die, and transplant tubers in the resting phase (during the summer)
Serapias vomeracea

Serapias vomeracea

The leaves have died back, but the tubers look beautiful – this is the right moment for transplantation

Ophrys apifera


After resting during the summer, fresh leaves and roots start to sprout
This is a good moment for transplantation
Root


Orchis
provincialis
PRG
ORCHIS

Coeloglossum viride

Gymnadenia conopsea

Goodyera repens

Pierfranco Arrigoni

17/08/2010

Pierfranco Arrigoni

Photo: Pierfranco Arrigoni

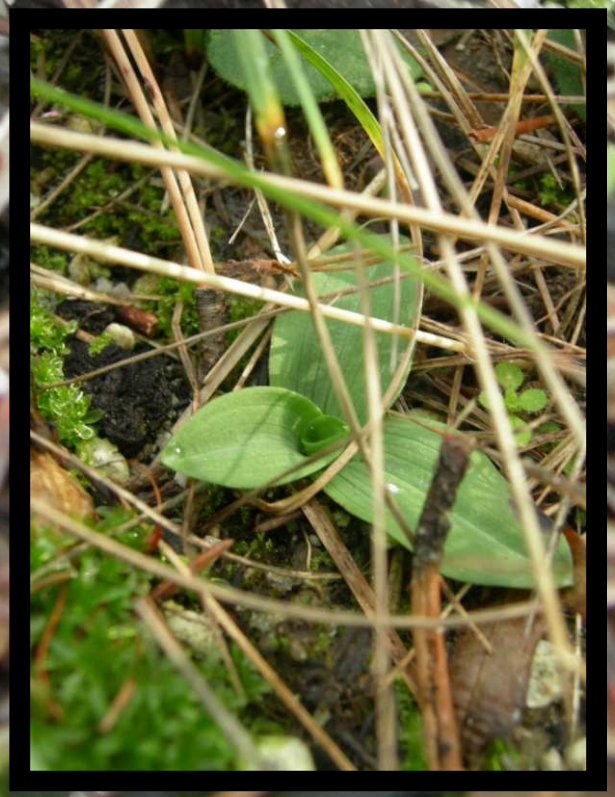
Photo: Pierfranco Arrigoni

Photo: Oliver Pierce

Photo: Pierfranco Arrigoni

Ophrys benacensis

13/10/2010



5/4/2011

22/5/2013

22/5/2013

22/5/2013

19/6/2013

Pea seed extracts stimulate germination of the terrestrial orchid *Ophrys apifera* Huds. during a habitat restoration project

SIMON PIERCE[1*], VALENTINA GUIDI[2], ANDREA FERRARIO[3,4], ROBERTA M. CERIANI[4], MASSIMO LABRA[2], ILDA VAGGE[1], BRUNO E. L. CERABOLINI[3]

(in press)

19/6/2013

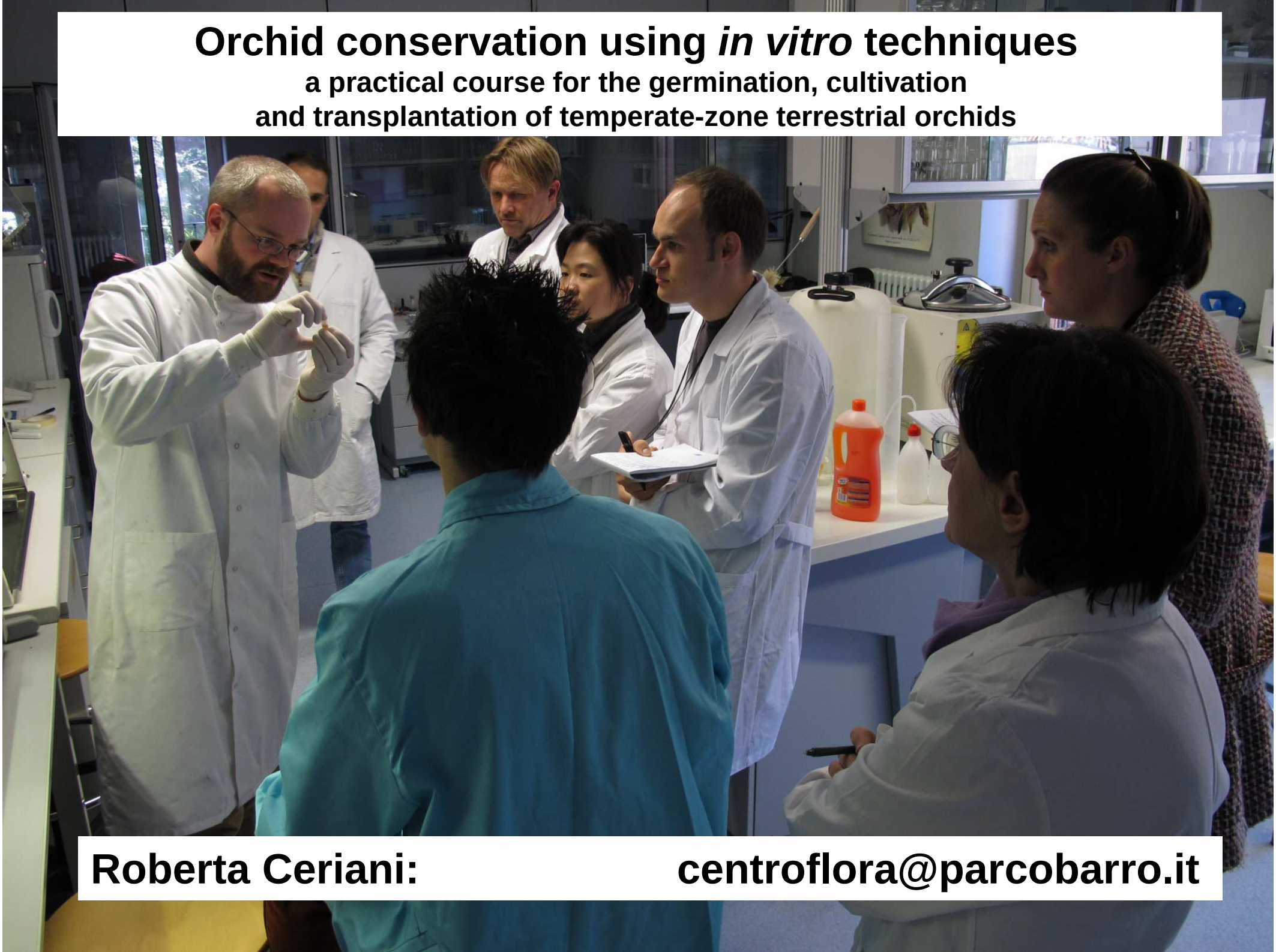

Ophrys sphegodes

28/3/2011

Ophrys sphegodes

Orchid conservation using *in vitro* techniques

a practical course for the germination, cultivation and transplantation of temperate-zone terrestrial orchids



Roberta Ceriani: **centroflora@parcobarro.it**


LAMINAR FLOW
1200 FLO
CARLO ERBA
ASALAIR
CARBO 900 EXHAUS

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