

Transfer to soil

Vernalization of seedlings

In nature most of the cold temperate orchids germinate in the fall and develop through the winter and spring where they form buds and one or more small roots. Then they need a cold winter. To break dormancy. Therefore, place the flasks in the refrigerator (5° C) for 12-14 weeks in December, January and February before transferring the plants to soil.

If the seedlings are potted without chilling, they will simply remain dormant and wait for winter. Eventually they run out of energy and die. If the seedlings are kept longer in the fridge, they will often develop leaves during spring and summer, even in the dark.



Dactylorhiza praetermissa protocorms with leaves developed in the refrigerator. They should have been replanted, but were forgotten in the refrigerator during summer.

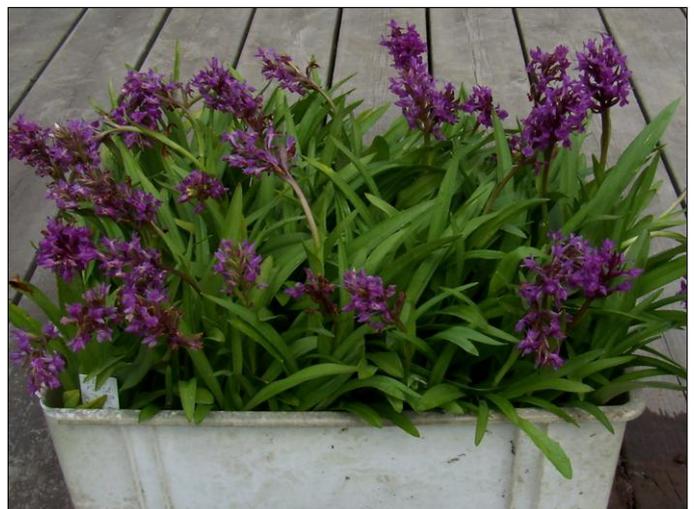
Species where seedlings do not have leaves during winter like *Dactylorhiza*, *Gymnadenia* and *Platanthera* survive transfer to soil very well. They should preferably be transferred to in a frost-free green house in March, April or early May. Species with winter-leaves and round tubers (*Serapias*, *Ophrys* and *Orchis*) should be transferred to soil during the summer dormancy when the old leaves have died and the new tubers have matured.

Soil mixtures

Most ground orchids respond well to culture in sandy soil. The reason is probably that sandy soil has good drainage and it is open and well aerated. If you do not have sandy soil in your



Dactylorhiza purpurella second year in soil. The plants now have 2-3 leaves.



Dactylorhiza purpurella third year in soil. The box is far too crowded and the plants should have been splitted the previous autumn.



Dactylorhiza purpurella fourth year in soil. They are now ready for a humid spot in the garden.

garden you may make it from four parts coarse gritty sand (1-4 mm) mixed with one part clay loam. Sometimes, I also add cat tray litter (baked moler pebbles, similar to Seramis). I have only bad experiences with peat-based soil mixes.

For the acid bog species and *Pleione*, I use a 2:2:1 mixture of vermiculite, 1-3 mm cat tray litter and sifted peat, and place the pot in saucer with water. These plants are later transferred to a mix of equal parts coarse sand, cat tray litter and partly decayed spruce needles from the organic top-layer found in dense spruce forests, which has a pH of 4,5.

Both seedlings and larger plants should be grown in plastic pots no smaller than 12 cm in diameter and preferably larger. Orchids from northern habitats (*Cypripedium*, *Dactylorhiza*, *Platanthera*, *Epipactis*, *Cephalanthera* and *Gymnadenia*) do not like dry air and warm soil, so the pots should be protected against direct sunlight. This may be achieved in cold frames where the pots are plunged in sand. About 40% shade is perfect. And shading is necessary, a single summer day with direct sun and 30° Celsius may kill all your seedlings and half of the mature plants. Temperate species and mountain species tolerate freezing well when planted in the garden, minus 20° Celsius is not a problem for most of them. It is different when they grow in pots where repeated freezing and thawing may kill many plants. The pots should be placed in a protected place where the temperature is more constant. Most species survive when the pots are plunged in sand in cold frames in the garden.

Water

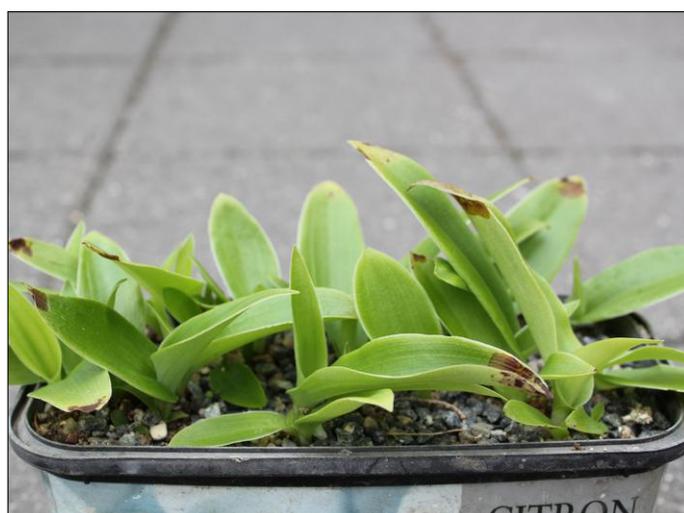
I use ordinary non-chlorinated tap water for most of my seedlings. It is my experience that ground orchids benefit from a bit of fertilizer, I therefore water the seedlings with commercial, liquid fertiliser, but only 1/10 the recommended strength. Species from bogs or wet meadows, for example *Calopogon*, most *Dactylorhiza*, many American *Platanthera* and some *Cypripedium* and *Epipactis* like a lot of water during summer.

The largest threat to orchids in pots is accumulation of salts. The problem comes when the plants are watered often, each time with small volumes of water. When the water evaporates, salts are left in the soil and this will soon kill your orchids. The solution is every time to water the plants with plenty of water, so the salts can be washed out.

Some of the acidic species and the sphagnum bog species (*Calopogon*, *Platanthera*, etc.) will not tolerate lime and they are very sensitive to salts. They are best watered with rainwater.



Dactylorhiza majalis x *maculata* third year in soil, much too crowded.



Satyrium nepalense first year in soil.



Satyrium nepalense seedlings in the garden. *Satyrium* must be protected from wind and strong sun as the leaves dry out very easily.