

# GROWING FERNS UNDER GLASS

Greenhouses and conservatories provide the opportunity to grow many attractive and interesting ferns that cannot tolerate the conditions in your normal living space or garden. Watering, humidity, temperature and light can all be manipulated to suit different groups of ferns. This leaflet highlights some of the preparations that will help you to successfully grow tropical and subtropical ferns.

Subtropical and tender ferns will often tolerate temperate climates but will be damaged or killed by frost. There are many ferns in this group that are easy to grow and will make good plants for cooler greenhouses and conservatories.

Most tropical ferns require both heat and humidity. Glasshouses that have the sole purpose of growing plants offer the most scope for raising humidity levels. Tropical ferns may also require additional light in the dark winter months.

## Heating

Glasshouses for subtropical ferns may require heaters to ward off temperatures below 5 °C, although most will fare better if the minimum winter temperature is 10 °C. Cold and damp can

lead to troublesome fungal infections and it is wise to ensure that there is air movement at all times. A simple electric greenhouse fan, set on its lowest speed, will often be perfectly adequate.

Heat can be provided by convection radiators, under-floor heating and fan heaters. These must be labelled suitable for greenhouse use. Heaters may burn or dry out nearby plants, so take care with the positioning.

Tropical ferns will require higher temperatures, usually 18–22 °C. The exact requirements will depend on the plants. Use reference books and websites on fern culture. Research the fern's natural habitat, including the altitude at which it grows. This information will help you determine minimum day and night temperatures.



Bamboo blinds used as shading.



Automatic misting at Belfast Botanic Garden.

## Cooling

Cooling the glasshouse in the summer can be a problem, when temperatures can rise very quickly if the glasshouse is in direct sun. Ideally, glasshouses should have some degree of shading from direct sunlight by trees or buildings. Otherwise, shading will have to be provided by blinds. Ideally these blinds should be external and be capable of being removed in the winter months to allow extra light to enter. The level of light transmission should be 20–40%. If appearance isn't important, heat reflective paint on the glass can be used during the summer. Ventilation can also help to control temperature, but often at the expense of humidity.

## Humidity

Humidity levels can be raised with open water trays, damping down by spraying water on to the floor, ultrasonic humidifiers, foggers or pressurised misters. A relative humidity level of 60 %RH is probably the minimum to achieve but many tropical ferns require levels of 80–90 %RH or higher. Terrariums can be used to strictly control the humidity for small ferns. Ultrasonic humidifiers, foggers and misting systems can be set to operate automatically when humidity drops to a pre-set level and are generally more reliable than manual methods.

## Lighting

Light can be controlled by lowering and raising blinds and can be topped-up in winter months with artificial lights on timers that extend the daylight to 12–14 hours. LED bulbs give out virtually no heat, have very long lifespans and are reasonably economic to buy and energy efficient to use.

## Pests and diseases

Growing any plants in an artificial environment can lead to problems not encountered in the garden. The most obvious is insect pests which can thrive in a closed environment, especially if it is crowded and there are no natural predators.

Aphids and scale insect can be particularly prevalent in glasshouses. Biological control can be tried, as can physical removal of insects if infestation is limited. Otherwise, proprietary insecticides have to be used. Ferns are not tolerant of all insecticides and they need to be used with caution. Powders such as permethrin may be better tolerated than liquid insecticides, particularly for controlling aphids. As a last resort, it may be necessary to control resistant insects by using a systemic liquid insecticide via the plant's roots.



A bad infestation with scale insect.

## Choosing the right fern

Cool glasshouses, that protect plants from temperatures below 5 °C, will often be used for plants which grow outside in the summer, but which need winter protection from frost or rain. These include *Davallia griffithiana* and *Nephrolepis cordifolia*.

Borderline hardy ferns, such as many tree ferns, *Pyrrrosia*, *Blechnum* and *Lepisorus* species will also benefit from winter protection. Warm glasshouses, with a minimum temperature of 10 °C, will provide a good home for many delicate *Adiantum* species such as *A. raddianum* and its many cultivars, as well as many *Pteris* and subtropical *Drynaria* species. Hothouses, usually above 18 °C, allow the cultivation of larger ferns and those ferns which climb or hang. *Goniophlebium subauriculatum* can drape beautifully if placed on a high shelf. Interesting *Microsorium* and tropical *Pyrrrosia* species will also do well. High humidity is required for ferns with an origin in tropical rainforests. Smaller ferns, *Bolbitis* and tropical *Selaginella* species may be best grown in a high-humidity warm terrarium. Always research the ferns you are hoping to keep. Be mindful of their substrate and watering needs and their natural growth habit.

## Cool greenhouse ferns, minimum 5 °C



**Felt Fern**  
*Pyrrrosia lingua*



**Lacy Tree Fern**  
*Sphaeropteris cooperi*



**Erect Sword Fern**  
*Nephrolepis cordifolia*

## Warm greenhouse ferns, minimum 10 °C



**Delta Maidenhair Fern**  
*Adiantum raddianum*



**Toothed Brake Fern**  
*Pteris dentata*



**Snake Leaf Fern**  
*Drynaria coronans*

## Hothouse ferns, minimum 18 °C



**Creeping Button Fern**  
*Pyrrosia nummariifolia*



**Blue Oil Fern**  
*Microsorium thailanicum*



**Lacy Pine Fern**  
*Goniophlebium subauriculatum*

## High humidity conditions, minimum 20 °C



**Asian Water Fern**  
*Bolbitis heteroclita*



**Peacock Fern**  
*Selaginella willdenowii*



**Dwarf Hare's Foot Fern**  
*Davallia repens*

The Exotic Fern Group is a community for enthusiasts of tropical, subtropical and indoor ferns. We bring together individuals who share a passion for these unique plants, offering opportunities to connect, learn and grow together. Members enjoy regular newsletters, social visits to private fern collections and online presentations. We also organise trips to larger public fern collections. Members can also benefit from access to fern and spore swap schemes, to expand and develop their own collections.

**Join the community for free!**

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