

# THE CLEAR FACTS ABOUT GLASS & GLASSHOUSES

Once upon a time all glasshouses were glazed in glass which made it a very simple decision when creating a permanent cover for plants.

These days, despite a bewildering array of alternatives, most commercial growers still opt for glass. Why? Because when all things are considered, when you look at growing and investment potential, glass is still the best most economic choice.



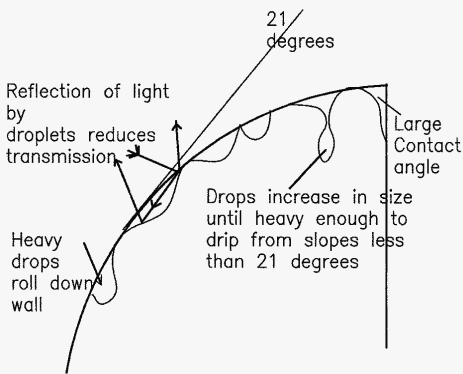
FACTORS TO CONSIDER	THERMAL CONDUCTIVITY	CONDENSATION
<p><b>Growing potential:</b> Light transmission, thermal conductivity, condensation, versatility.</p> <p><b>Investment potential:</b> Durability, working conditions, investment &amp; resale, glass availability.</p>	<p>Glass is almost totally transparent to short wave solar radiation and virtually opaque to long wave thermal radiation.</p> <p>So solar energy passes through glass, falls on the plant and soil. The energy absorbed raises the temperature of the plant and soil which in turn act to warm the surrounding air by convective radiation and in the form of long wave thermal radiation.</p> <p>Being almost opaque to long wave thermal radiation, the energy produced by plant and soil does not escape. It stays within the glasshouse. The glasshouse thus acts as an accumulator of energy derived from the sun. It heats itself. And does so more efficiently than any other glazing material.</p>	<p>Condensation of water vapour on the inside of greenhouses can cause many problems - particularly where dripping increases risks of crop damage or disease.</p> <p>On surfaces which are essentially water repellent, condensation forms as large droplets. Glass on the other hand wets very easily and droplets spread out quickly with a low angle of contact with the glass. Even when condensation is heavy, droplets coalesce to form a film of water on the glass. This film then runs down the slope of the roof or wall and only drips at the lowest point, causing little or no damage to plants.</p> <p>Hemispherical and low angled roofed plastic glazed greenhouses increase the likelihood of heavy</p>
<p><b>LIGHT TRANSMISSION</b></p> <p>Lighting levels are critical for the growth and production of most covered crops. DSIR tests have shown that glass is not bettered in its transmittance of photo synthetically active light, when compared with all other horticultural glazing products available in New Zealand.</p> <p>And this efficiency does not deteriorate with age. All other horticultural cladding materials dull as they age and become far less effective eventually requiring costly replacement.</p>		



Growing Under Glass, University of Auckland

droplets not dispersing by flowing down the material, but with unwelcome dripping on plants. Condensation as large droplets (which doesn't occur with glass glazing) also restricts transmission of light into the greenhouse. In plastic glazing this has been calculated to reduce transmission of solar up to 35%.

*Condensation on plastic*



The duration of conditions causing condensation on greenhouse roofs varies according to the glazing material used. Sun shining on a glass roof raises the temperature of the glass as the glass absorbs some of the long wave solar radiation. On a cool sunny morning condensation will quickly clear from a glass roof as its temperature is soon raised above the dew point of the glasshouse air. Plastic glazed roofs readily transmit the long wave solar radiation and hence little if any of the solar heat is retained with the result that the roof is maintained close to the average of the inside and outside air, and condensation persists until outside temperatures rise above the inside dew point temperature.

**VERSATILITY**

A very wide range of plants can successfully be grown under glass. Lighting levels can be lowered where required, while still retaining the ability to switch back to light sensitive plants when changing conditions arise.

**DURABILITY**

This is where glass wins hands down! Apart from normal maintenance, no provision need be made for re-cladding. Glass does not deteriorate. It therefore has an unmatched productive life span. It is then essential when weighing up costs and long term potential, to consider the inevitable costs of regular replacement when other materials are employed.

**WORKING CONDITIONS**

Yet another factor worthy of consideration. Glass provides a pleasant well lit environment for gardeners. Good all round vision makes it more agreeable, less claustrophobic for those inside. A great sanctuary to relax in and potter.

**INVESTMENT & RESALE**

A glasshouse is a secure investment which can greatly enhance a property's value and remain a lifetime permanent asset.



**GLASS AVAILABILITY**

In the event of needing to replace glass, it is always available throughout the country at an affordable price.

